

THROUGH THE AGES

FEBRUARY, 1924

What shall we make his monument—
A shaft of marble, straight and tall,
Wreathed by the city's smoky pall—
To mark the streets where he came and went?
To gleam in the city's myriad lights—
To catch the flame of the morning sun—
To tower above us when day is done—
A dim shape seen in the murky light?

M. R. S.



THROUGH THE AGES



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NO. 10

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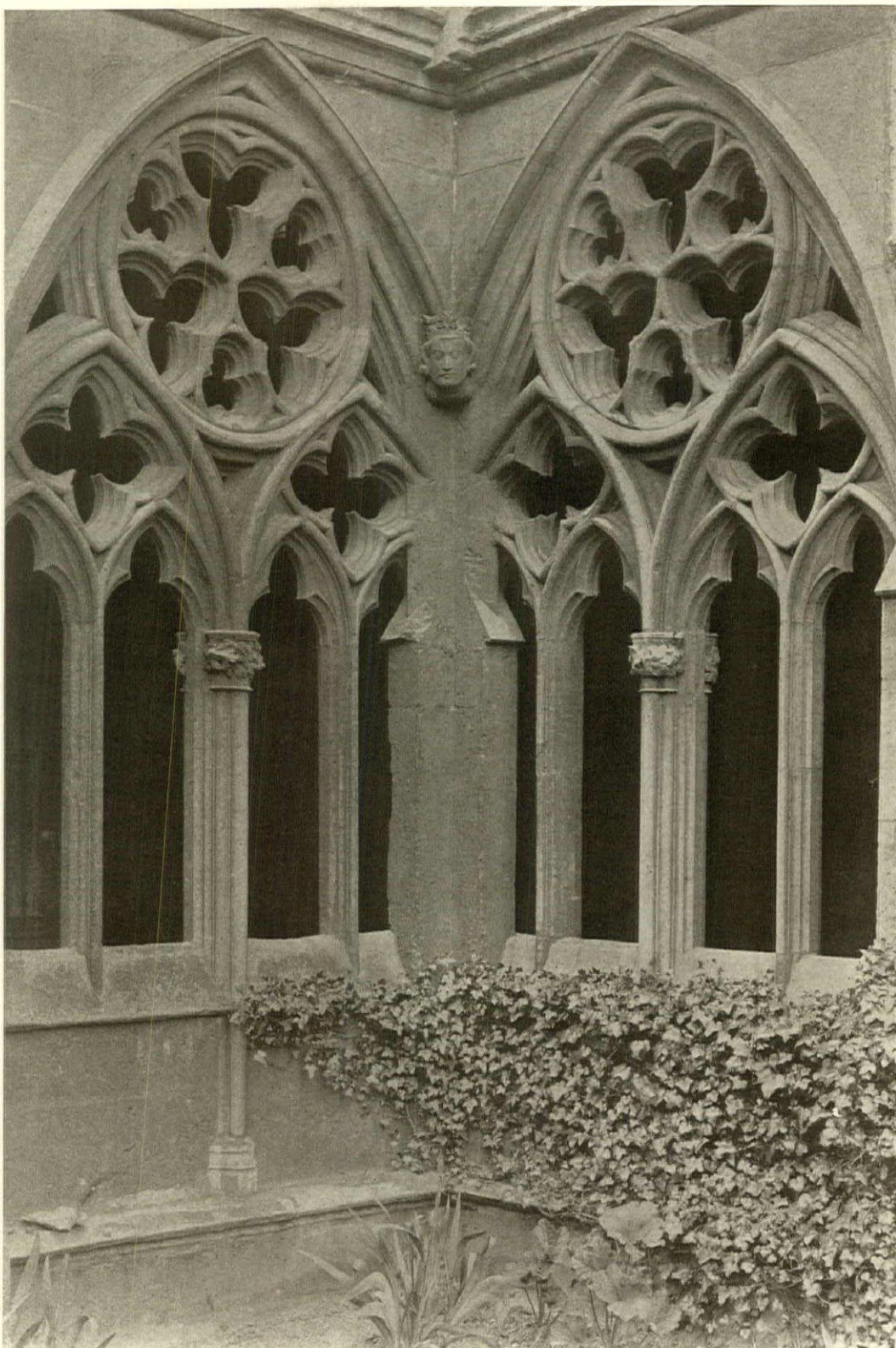


Illustration courtesy E. H. Glidden, Architect, Baltimore, Maryland.

Corner of the Cloisters of Lincoln Cathedral, in England.
This Gothic structure was begun in 1192 and finished about 1280 A.D.

THROUGH THE AGES

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

VOL. 1

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A TROJAN PUBLIC BUILDING

Troy, New York, Gas Company's Home Has a Pleasing Interior of Marble

BACK in 1916, there was completed in Troy, New York, a new building for the Gas Company of that city. The architect, Mr. L. N. Milliman, was told that there were three things that the Company wished to attain. The structure was, first of all, to be built for the convenience of the gas consumer. This was to be a paramount consideration. The comfort of the employees was considered as of almost equal importance. Finally, there was to be no sacrificing of beauty of design, especially of the interior, for the purpose of utility.

That the architect has succeeded in carrying out the suggestions of his clients is amply proved by the fact that today the Troy Gas Building is the pride of the city. No other building in Troy can compare with it in the manner in which such attractiveness and adaptability have been combined with such striking effect. It is significant that in the achievement of this result marble has played a very important part.

The exterior architectural style is an adaptation of the Italian Renaissance. There are two main entrances, with an entablature over each finished with a wreath-enclosed

window. Each entrance is equipped with a revolving door that is encased in marble, the first touch of the stone that is used so amply within. The first story is of rustic-work, with heavy arches over the show windows. The second and third floors are included in an Ionic order, with heavy monolithic columns having fluted shafts and carved capitals. The fourth floor is incorporated in a frieze and the whole crowned by a cornice, supported by a dental course and heavy mouldings, with an overhanging parapet enriched with an interlacement band enclosed by cartouche-crowned tops at the end piers.

The building has a frontage of fifty-two feet and all floors are made either of marble or a marble composition. The first floor contains the main display room, cashier's room, collectors' room, and street and electrical superintendents' offices. The display room is wainscoted to a height of ten feet six inches with marble set off by monolithic marble columns and pilasters with ornamental capitals. The marble used was American Pavonazzo, from the underground quarries of West Rutland. The heavy moulded

ceilings and the floors of a red variegated marble augment the impressiveness of these chambers.

The base courses of Verde Antique are in notable harmony with the lighter tints of the walls. In these the arrangement of the color is the reverse of the Pavonazzo—the background is of dark green and the veining is white. The corridor base is of this same stock and so are the insets of the floor. The walls in the corridor are Brocadillo, another

West Rutland marble with characteristic green markings. The red marble of the floors is Oriental, obtained from the Swanton quarrying district.

All corridors, hall rooms and staircases are wainscoted in marble and the floors of the upper stories are of terrazzo. The interior of the new building, taken as a whole, is something more than the home of a large organization. It is a tribute to American marble and the methods of American workmanship.

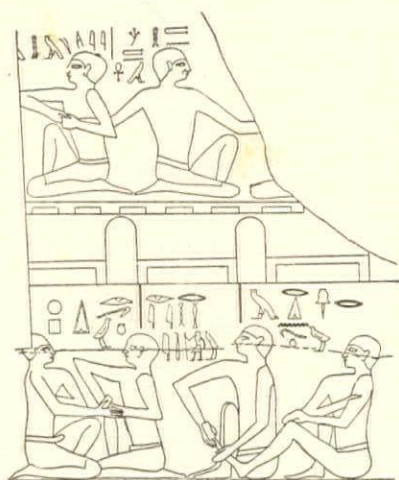


Display room of the Troy Gas Co. The columns and walls are of American Pavonazzo.

MEDICAL HISTORY IN MARBLE

THE earliest sculptures in the history of medicine are those found in the Egyptian tombs, and they date as far back as 4500 years ago. They depict surgical operations of a rather painful nature and show quite clearly the sufferings of the patients. These stone engravings were discovered by Professor Max Müller while on a mission for the Carnegie Institute.

The remains of Greek sculpture which



Earliest surgical operation pictured in the Necropolis of Saqqarah at Memphis.

have been found in recent centuries contain a great many examples of statues of Æsculapius. This Greek god of medicine, who was probably a great physician and surgeon whom the gratitude of his patients deified, must have been held in very high estimation. After his death people could not bring themselves to believe that a man who had shown, as it seemed to them, such power over life and death in the case of others, could be himself completely amenable to the illnesses of life, or even to death itself, and so they transferred him to a place among the immortals. Manifestly a great many people must have thought that the having of a

statue of Æsculapius near them, brought good health, and as a consequence of this impression a whole store of statues of Æsculapius have been excavated all over the Greek region, not only in what we now know as Greece, but all along the Asia Minor coast and in the southern part of Italy which came to be known as Magna Grecia, and also even in the center of Italy. Many cities apparently felt that their health would be ever so much better if they had a statue of this Greek god of medicine who was held in such reverence. And so they erected one.

One of the handsomest of these statues of Æsculapius, an example of Greek sculpture



The famous black marble statue of Æsculapius, Capitoline, Rome.

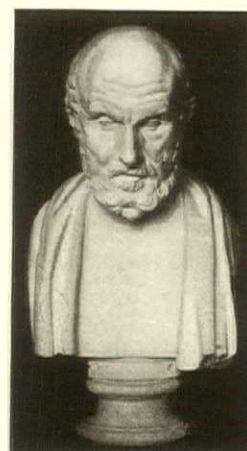
from an early period and famous above most of those that we know, is the statue in antique black marble which is to be seen at the Capitoline Museum in Rome. A picture of it is here presented which shows quite well the esteem in which the Greeks held this great physician of their early history. There

Illustrations and part of reading matter courtesy New York Pharmacal Association.

is something more than human in the dignity of this wonderful old piece of statuary, so that it is easy to understand that it has come to be one of the best known of the remains of Greek sculpture that we possess.

Naturally the Greeks appreciated the value of health and thought seriously of the neces-

as an extremely thoughtful looking, high-browed kindly gentleman with a beard, very much like that which his colleagues in country places, particularly of a couple of generations ago, used to effect. Nearly every museum of any importance in Europe has an original Hippocrates



Statue of Hippocrates, British Museum.

sculpture from the older time and the one here presented, an antique bust which may be seen in the British Museum, is one of the most characteristic of these representations.

Many other physicians in Greece besides Hippocrates had their lives and personalities preserved in marble for us and one of these, Jason, is here presented making an examination of a patient by means of palpation. His fingers rest just below the edges of the ribs on the left so that it was probably some



Hygieia and Æsculapius, the Goddess of Health and the God of Healing, Ottoman Museum, Constantinople.

sity for preserving it, and so many examples have been found, in the excavations, of companion statues or sculptures of Hygieia and Æsculapius, the goddess of health and the god of healing. This goddess who rules over and maintains well-being and the divinity who presides over the restoration of good health, when for some reason it has been lost, are very worthy complements of each other.

The Greeks honored the great father of medicine, Hippocrates, only less than Æsculapius, the god of medicine, and so it is easy to understand why an immense number of busts and figures identified as Hippocrates have been found in the course of modern excavations. He is usually represented



Tomb monument of Greek physician Jason, British Museum.

stomach complaint of his patient that he was trying to locate. At the feet of the patient on the left there is one of the huge cupping instruments which the Greek physicians made so much use of in the treatment of their patients. The size of it would indicate that they must have obtained some rather vigorous action by means of it.

Not all the Grecian statues that have an interest in the history of medicine were of heroic size. Some of them were monuments meant to perpetuate the memory of men who were looked upon as just ordinary individuals, but who had done something that

made it worth while to preserve their memory, and so they were sculptured about natural size. In the museum of the evangelical school at Smyrna there is a statue from the old times of Artemon, a physician of the city of Smyrna, presented in high relief and with characteristic fine Greek art. He is accompanied by two boys in short clothing, one of whom carries upon his shoulder a small



Statue of the physician Artemon in Smyrna, erected by the city.

casket, evidently containing the medicines and perhaps some instruments. What is most interesting about the statue is that it was erected by the city of Smyrna in honor of the physician whose name Artemon is thus preserved for us, probably because of heroic work done during a time of epidemic in the city. It is noteworthy that with his name is linked that of his family. These old Asia Minor Greeks rightly thought that when a man risked his life in an epidemic his

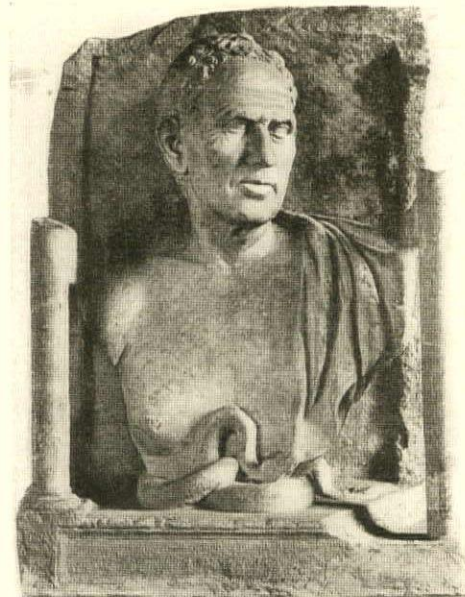
family shared the risk and so they honored them with him.

Physicians are often mentioned on tombstones from the old Roman times and not infrequently various symbols of their profession were carved upon the monument. We present here the memorial tablet of the physician of the town of Palestrina, now known as Præneste, not far from Rome. Above it are carved an instrument case and two rolls of bandage which seem to indicate that this particular member of the profession followed the avocation of a surgeon rather than a physician.



Tombstone of Aelius Pius Curtianus at Palestrina.

Portrait sculpture developed early in the history of humanity and the Egyptians some 5,000 years ago made some of the finest portrait heads that have ever been made. The making of portrait statues had another



Marble monument to an unknown Roman physician in the Lateran Museum, Rome.

supreme era of development, 3,000 years later among the Romans, and there have been found in the Roman excavations statues of physicians which give an excellent idea of the man of medicine of 2,000 years ago. One which is preserved in the Lateran Museum in Rome represents a man of about the time of Christ. He had a strong face, an intellectual forehead, a chin and nose indicative of character and yet, as may be seen from our reproduction of it here, there is a look of kindly interest in his face, even in the marble, which must have made patients ready to confide in him. Certainly the sculptured head makes us feel that we would like to know a good deal more about the man, but unfortunately all that we know of him is contained in the brief inscription which tells us that he lived and died and was a physician.

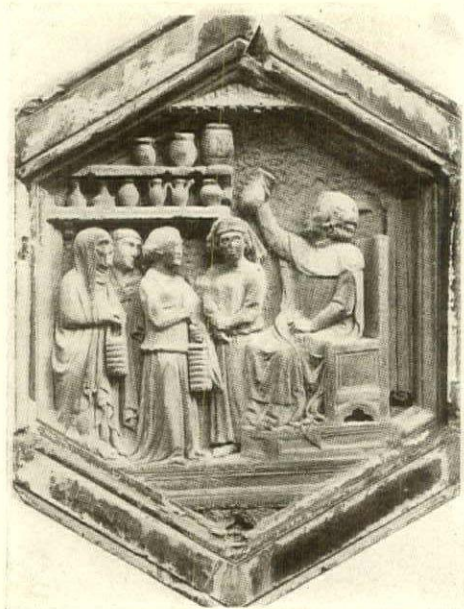
From the middle ages there have come to us a number of very interesting sculptures which are of special interest and significance for the history of medicine. In the well-known series of medallions on the Campanile in Florence, Giotto's tower, as it is

usually called, many present incidents and customs in the lives of the various professions and crafts of Florence. Among them there is one devoted to the physician. He is represented seated in his office, surrounded by jars and ampullæ of various kinds, holding what is evidently a glass jar in his hand. Most of these sculptures on the Campanile in Florence are attributed to Giotto himself, though he is known ever so much better in the history of art for his painting than his sculpture. This is, however, one of the sculptures that is said to show very strikingly the great Florentine's power with the chisel as well as the brush. John Ruskin felt that he could scarcely say enough in praise of these wonderful gems of art. He even did not hesitate to say that of their kind they "must be held certainly the chief in Europe and that these medallions in bas relief made the most precious kind of decoration."

Farther on in the middle ages sculpture relating to medicine usually has reference to the many epidemics which took place and carried off so many people. It was not an unusual thing for an epidemic, for instance, to carry off more than half the inhabitants of a city before finally its virulence abated and the disease began to disappear or to occur in such milder form that many of the patients recovered from it. No wonder then that such events should occupy a prominent place in history and art.

In Vienna is the famous Pest Column, as it is called, situated on the Graben in that city. The column commemorates the awful epidemic of pest which occurred in Vienna in 1697 when, it is said, some 70,000 victims of the disease died before relief came. The column is erected in the florid detailed style of the early eighteenth century, but it makes an extremely impressive monument.

In Bologna there is a handsome statue, which we have reproduced, of Tagliacozzi,



The doctor's diagnosis. Medallion on the Campanile, Florence. Probably by Giotto.

the distinguished Italian surgeon, who in the closing years of the sixteenth century revived the operation of rhinoplasty for the making of a new nose to replace one that had been cut off or had ulcerated away. He is represented with a new made nose in his hand.

The Italians have been rather faithful in the erection of sculptured monuments to their great scientists, and visitors to Florence will recall this handsome monument to Francesco Redi (died 1694) to be seen at the entrance to the galleries of the Uffizzi in Florence. Redi was a naturalist rather than a physician, but he gave the deathblow to the idea of spontaneous generation. To him we owe the well-



Monument to Casparo Tagliacozzi, in Bologna.



Pest Column in Vienna.

known maxim of natural history, *omne vivum ex ovo*, (every living thing comes from an egg). He is represented in this statue with the Æsculapian staff and the serpent coiled around it, but also with a lyre. These two are symbolic of the fact that he was a litterateur as well as a medical scientist.

One of the

handsomest of modern monuments to a physician is that made by Thorwaldsen, the famous Danish sculptor, to Berlinghieri, the Italian eye specialist at the beginning of the nineteenth century. This fine monument in which a great nineteenth century sculptor has dared to invite comparison with the antique, is one of the very interesting sights of the historic Campo Santo at Pisa, not far from the well-known Leaning Tower. As the Campo Santo is full of artistic monuments of one kind or another from many centuries, it has an appropriate setting.

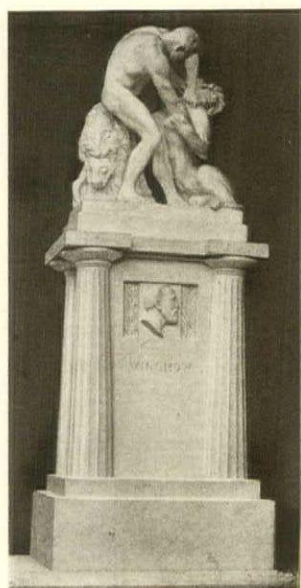


Statue of Francesco Redi, Naturalist, Physician, Litterateur, on the portico of the Uffizzi, Florence.

One of the most striking monuments to a modern physician is undoubtedly that to Albrecht von Graefe, the eye specialist in Berlin. It is beautifully cared for, or was in the days before the war, and the patient training of the ivy around it has greatly enhanced its beauty. Von Graefe amply deserves it. He was a handsome man who died at the early age of forty-two with the reputation of probably being the greatest of modern eye surgeons.

The Virchow memorial, the plan for which

was selected after competition among the sculptors of Germany, is a characteristic example of modern German sculpture. The group that crowns the monument consists of the giant Science who has taken the monster Disease by the throat and is evidently about to strangle her to death, for she is represented with a female human head and an animal body. Beneath this symbolic figure there is a head of Virchow in low relief and a single word, his name. Virchow's work in



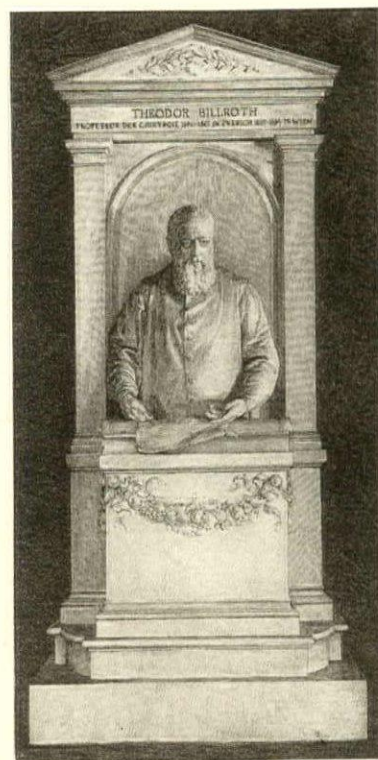
Monument to Virchow by Fritz Klimsch.

pathology deserves such memorialization as this, for more than any other in the nineteenth century he enabled physicians to understand disease.

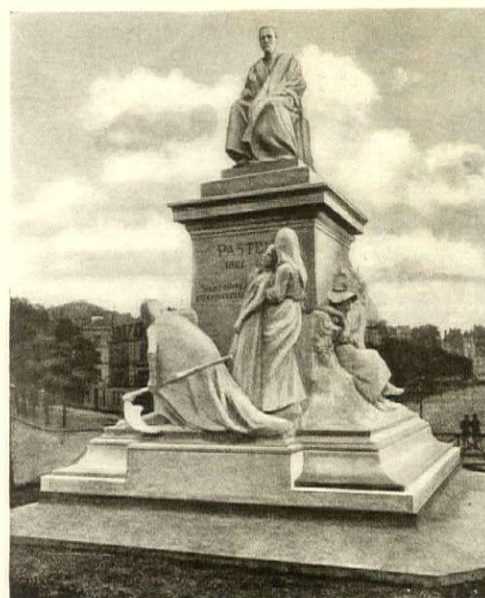
The pride of medical Vienna in the later nineteenth century was Theodor Billroth, the surgeon. Billroth was well worthy of all the honor that the Austrians gave him. He was the pioneer of visceral surgery, and he made the first resection of the esophagus and the first successful resection of the pylorus for cancer. This monument to him by Kaspar von Zumbusch is in the University of Vienna.

Our twentieth century has done nothing better in monuments to a physician than the Pasteur monument in the Place de Breteuil, Paris. The picture we present gives a very good idea of it. It is about twenty-three feet high. Pasteur, seated in the familiar attitude of his later life, crowns it and on the four sides of the monument below there is a series of life-size figures, symbolic me-

morials of his work. On the sides of the monument that cannot be seen in the picture there is a shepherd with his flock and a farmer driving his sturdy steers, tributes to Pasteur's conquest of anthrax and other cattle diseases. On the right side of the monument, as it is pictured, there is a farmer girl resting in peaceful enjoyment of her labors. On the left the large figure is a mother holding her daughter in her arms.



Monument to Theodor Billroth by Kaspar von Zumbusch in Vienna



Pasteur Monument in Paris, by Alexander Falguière.

THE ORIGIN OF TENNESSEE MARBLE

By JOHN STEPHEN SEWELL

MARBLE is crystalline limestone. Most limestones are believed to have originated from the deposit in shallow seas of the remains of marine organisms like corals and crinoids which secrete lime skeletons or shells. Tennessee marble is known to have originated in this way, because under the microscope, and sometimes to the naked eye, the remains of these organisms are still apparent and can be recognized as such. Often they are plain enough for the scientists to separate them into genera and species.

It shows that the area where the Tennessee Marble occurs must have been covered by the sea at the time of its formation. As a matter of fact geological history shows that from the earliest times there was a backbone of dry land running northeast and southwest approximately along the location now occupied by the Blue Ridge Mountains. At the time the Tennessee Marble was formed, the dry land of North America consisted of a large area, mostly in what is known now as Canada, but extending in a strip running to the southwest along where the Blue Ridge Mountains are now, and in a similar strip in the far western part of the country. In other words it is as though the Gulf of Mexico had extended over the land and covered nearly the whole of the United States.

These marine organisms must have very clear water in which to live and the water must not be more than six hundred feet deep. Likewise the climate must not be too cold. Therefore, while the Tennessee marble was being formed, the area now occupied by it must have been covered by the sea and it must have been far enough from the shore lying to the east of it so that the sediments

brought down by the rivers of those days had time to settle, so that no great amount of sediment from the shore was deposited with the material which afterwards changed into marble.

After this process went on for a long time, perhaps for millions of years, conditions changed and the lime deposits on the bottom of the sea became covered with other materials and finally began those earth movements which resulted in the uplifting of the mountains which lie between the Tennessee Valley and the eastern slopes of the Blue Ridge. During this process the heat and pressure changed the sediments accumulated by the marine organisms into crystalline limestone which is now Tennessee Marble. It is believed that nearly the whole of the Tennessee Valley was at one time covered by these sediments. What remains is probably less than ten per cent of the whole, but no one need worry on that account about the exhaustion of Tennessee Marble. There is enough to last at the present rate for thousands of years.

Geologists can easily tell us the order of the different ages and give us fairly accurate estimates of their relative duration, but when it comes to expressing them in years, there is great uncertainty. From the best estimates available, it is probable that the time that has elapsed since this marble began to be formed is not less than one hundred million years; probably it is not more than five hundred million years. In any case when you gentlemen are quarrying it out in blocks you ought to do it with more or less reverence, as though you were opening up the time-worn tomb of Tutankhamen.

It is a very interesting fact that the three

rocks, as the geologist calls them, which are being more extensively used than any others, all owe their origin to organic agencies. These are limestone, coal and iron ore. The limestone owes its origin to marine animals like corals and crinoids; the coal owes its origin to vegetable matter accumulated in bogs like peat bogs and subsequently changed by geological process to its present form; iron ore is believed to owe its origin mainly to the action of acids produced by decaying vege-

table matter. It is also an interesting fact that the greatest deposits of all these stones are believed to have originated during one geological era which is known as the palæozoic, which merely means ancient life; so that to these primitive forms of life which flourished and disappeared millions of years ago, we owe the accumulation of the three kinds of deposits which are probably most necessary to us in this modern day and generation.



"Narcissus," a statue carved out of Pink Tennessee marble and placed at the head of a small garden pool in Forest Hills, Long Island, N.Y. It expresses with charming gayety all the whimsical mischievousness of youth. The sculptor was Adolph A. Weinman, of New York City.

A LIST OF THE WORLD'S MARBLES

By J. J. McClymont

Note—In a past 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.

Castera-Verduzan

Quarried at Castera Verduzan, in Gers, France.

Fine yellow tint, almost uniform.

Castle Island Marble—See Golden Breccia.

Castletown

Scarlet Quarries, near Castletown, Isle of Man.

Dark blue-gray streaked with white veins and sometimes showing a few fossils.

Castletown (Fluor Spar)—See Blue John and Blue John Amethyst.

Castres—See Noir De Castres.

Caswell Sound

Caswell Sound Quarries, Otago, New Zealand.

Light gray crystalline rock through which run veins of a darker shade.

Takes a good polish.

Catacolon Quarries on the Island of Marmara produce Marmara Statuary and Rose D'Orient.

Cathim Stone—Same as Caen Stone.

Catlinite or Indian Pipestone.

Is found in various places in Minnesota and Wisconsin. The principal source is at Pipestone City, Minnesota.

This is not a true mineral but an indurated clay of quite variable composition.

Cat's-Eye Agate Alabaster—See Satin Spur.

Cattedown—See Deadman's Bay.

Caunes—See Languedoc Griotte De Caunes and Vert Moulin De Caunes.

Cava Romana—See Travertine (Italian).

Cave Marble or Cave Onyx.

This name is given deposits of Onyx Marble that occur on the floors, sides and roofs of caves. Few of those deposits in various countries have produced and are producing Onyx for the trade, but generally cave deposits, especially those on the sides and roofs, are but thin veneering and of no commercial value.

Cavendish Marble—Undeveloped deposits of marble occur in this township in western Vermont.

Cavernous

Containing irregular cavities or pores.

Ce

Quarried in the Valley of Seriana, Italy.
Leaden gray with white markings.

Celbridge—See Irish Black.

Cellular or *Vesicular*.

Containing cells or vesicles; very common in eruptive rocks.

Central African (Soapstone)—See *Steatite*.

Central Asia—See *Lapis Lazuli*.

Central India—See *Sabalgarh*.

Ceon

Quarried in the Valley of the Ceon, Lot, France.

Clear brownish yellow, with black clouds.
Takes good polish.

Cere—See *St. Cere*.

Cerfontaine (Fossil)

Cerfontaine Quarry, Ardennes.
Red, gray, blue and white.

Cervelas or *Cervelatte* or *Sausage Marble*.

An ancient marble said to have been quarried in North Africa.

Dark red, with gray veins and white spots.

Cervelas Rose Vif—Same as *Languedoc* from the *Aude Quarries*.

Cervelatte or *Sausage Marble*.

A name given to many red mottled French marbles.

Cette

Quarried near the Port of Cette, Herault, France.

Dark red, with gray and white markings.

Ceylon White

Limestone Quarries, Kandy, Central Province, Ceylon.

White, with spots of yellow, purple, and black.

Chair—Carnation or flesh color.

Chalen—Same as *Marvilla*.

Chalanches

Quarried in *Chalanches*, in *Isere*, France.
Pinkish white, with small white spots.

Chalk (a soft limestone).

White, gray or buff.

The harder kinds of chalk were used in the rubble walls of Roman times in London, and have been used in cottages and occasionally in churches of various places in England, where it is known as *Totternhoe Stone* from quarries and mines around the village of *Totternhoe* near *Dunstable*, *Bedfordshire*, England. This variety is described as almost white, another variety known as *Beer Stone* from mines close to the village of *Beer*, near *Seaton*, *Devon*, has a creamy white tint when fresh and a paler color after being exposed.

Chalons—Same as *Eschaillon*.

Champion Pink—Group A.

Gray Knox Quarry, near *Knoxville*, *Tennessee*.

Light pink with waves of darker shade and occasional veins or crow feet.
Takes good polish.

Champlain Black—See *Swanton Black*.

Champlain Lake or *Champlain Marbles*—

See *Jasper*, *Lyonnaise*, *Olive*, *Oriental*, *Royal Red*, *Swanton Black*, *Swanton Dove*, *Vermont Verde Antique*.

Champoli

Quarried in *Loire*, *Champoli*, France.
Blue, gray, white and yellow.

Champ-Robert

Champ-Robert Quarry, *Nievre*, France.
Grayish white with small black veins.

Champville—Group C.

Quarried in France.

Cream-yellow color, with occasional rose coloring. Is a fine grained dense marble. Takes medium polish.

Charlemont

Quarried at Charlemont in Ardennes.

Deep red with white veins.

Charleroi—See St. Anne.

Charleville (Fossil)

Charleville quarries in Ardennes.

Red, mottled with gray, blue and white.

Chartreux

Quarried at Cambovin, in Drome, France.

White.

Takes a good polish.

Chassignelles Foret des Brousses

Quarried in France.

Light whitish color.

Chateau (Breche)—See Breche Montagne du Chateau.

Chateau De Pratz—Same as Jaune Lamar-tine.

Chateau-Landon

Chateau Quarry, in Seine et Marne, France.

Banded with varied shades of yellow and white veins and fossils.

Chatelperron Marbles

Quarried at and near Chatelperron, in Allier, France.

Are generally of a grayish white. Some have pinkish veins, and others quarried at Gilly are veined with yellow, while others are white and some are mottled blue, white and gray.

Chauk-Sen—The name by which Jade is known in Burma.

Chaumont—Quarried at Chaumont, Marne, France.

Whitish gray with pink spots.

Chellaston—See Alabaster (English).

Chemtou

Modern name for Simittu Colonia, in the Medjerda Valley, Tunis, Africa.

Near this place are located the quarries that according to Playfair produced the Roman Giallo Antico (Numidian Yellow). The location of the quarry was lost for many centuries and accidentally discovered when the railroad from Algeria to Tunis was under construction. The quarry was reopened and has been in operation almost continuously for many years, but is not operating at present.

Chenove

Quarry near Chenove, Cote d'Or, France.

Light brown with white spots.

Cher

Quarried at Salle-Au-Roi, Cher, France.

Red and gray.

Cherani

One of the quarries producing Marmara.

Chercos Beteado—Group A.

Quarried at Chercos, Sierra De Las Filabres, Almeria, Spain.

White, traversed with numerous gray veins.

Chercos Blanco—Group A.

Quarried at Chercos, Sierra De Las Filabres, Almeria, Spain.

A white statuary.

Obtainable in large blocks.

Cherokee—Group A.

Tate Quarry, Pickins County, Georgia.

Bluish white with clouds of darker shade.

Takes good polish.

Cherokee County Marble—See Regal Blue.

Cherokee Strip Marbles—Same as Oklahoma Marbles.

Chester County Marble—See Penna. White.

Chiampo Dark or *Tavernelle Dark*—Group C.

Quarried at Montalato, Venetia, Italy.
From light yellow to brownish yellow.
Takes high polish.

Chiampo Flurie or *Tavernelle Flurie*—Group C.

I.M.V. Quarries near Chiampo, Venetia, Italy.
Creamish yellow with fine bluish markings.
Takes high polish.

Chiampo Perla or *Tavernelle Clair*—Group C.

Quarries near Chiampo, Venetia, Italy.
Light creamish yellow slightly variegated.
Takes high polish.

Chiampo Rosato or *Tavernelle Rose*—Group C.

I.M.V. Quarries near Chiampo, Venetia, Italy.
Light creamish yellow slightly variegated with rose markings.
Takes high polish.

Chian

The Porta Santa of the ancient Romans was quarried on the island of Choïs, Asiatic Turkey.
Light and dark gray with fine red and yellow veins.
Not available.

Chickamauga Limestone

Name given by American geologists to a formation occurring in about the middle of the Ordovician System.

Chiem Lake Marbles

See *Ruhpolding Red* and *Red and Green*, which is quarried near Lake Chiem.

Chili Lapis Lazuli

Quarried near Ovalle, Chili.
Dark Azure.
Occurs in small nuggets only.

Chilmark Stone

An English Limestone, which has been used for hundreds of years.
Yellowish brown, but assumes a greenish tinge when exposed to the weather.
Contains about 10 per cent of Silica.

Chinese Black

Sui Hing Quarries, Tung on Mt. Kwang, Tung Province, China.
"The black marble of South China is a sub-crystalline rock and very fine grain."
(Watson)
Takes good polish.

Chinese Black and White

Sui Hing Quarries, Tung on Mt. Kwang, Tung Province, China.
"Composed of alternating black and white clouded and contorted bands and veins, with a few black and white patches."
(Watson)

Chinese Breccia

Sui Hing Quarries, Tung on Mt. Kwang, Tung Province, China.
"It is a shattered limestone with dark red veins and occasional white calcite patches, the ground mass is mottled with white and pink."
(Watson)

Chinese Breche (French)

Same as the French marble *Breche Chinoise*.

Chinese Gray

This is probably *Gray Siam*, as large quantities of this material are used by Chinese marble makers.
Until a few years ago Italian marble was

brought in large quantities to China and when worked into buildings and according to Watson were then known as Chinese white.

Chinese Variegated

Sui Hing Quarries, Tung on Mt. Kwang, Tung Province, China.

Delicate pink to pink and purple flowered patches, with white and occasional red veins.

Chinese White

Ting Tak Quarries, Fe Shu Ngan Mt. Kwang, Tung Province, China.

Dull white with few pale green markings.

Chios Island—See Chian.

Chippal

Quarried in the Vosges, France.

One variety is whitem others are grayish white with blue veins.

Chlorite or *Viridite*.

Under the general name of Chlorite are included several minerals; the three principal varieties are Ripidolite, Penninite and Prochlorite.

Chorges—See Portor

Chudleigh

Chudleigh Quarries, near Torquay, Devonshire, England.

Deep black through which run a few white veins and thread-like markings.

Churchtown

Churchtown Quarries in Cork County, Ireland.

Red, speckled with white

A brownish red and black marble is also found at Churchtown.

Ciacci

One of the quarries producing Roman Travertine.

Cieix—See Bleu De Savoie, and Savoie Doree.

Cintra

Quarried at Cintra, Estremadura, Portugal.

Gray mottled and veined with blue and black.

Cipolinnacci di Carrara

This is no doubt the same as Cipollino Italian, although name indicates that it comes from Carrara.

Cipollino Antico (Greek)—Group A.

Quarried in Greece.

Light green background with dark green deep violet veins.

Takes high polish.

Cipollino Grand Antique—Group C.

Light green for ground tone with light to dark green violet veins.

Takes high polish.

Cipolla—Onion.

The name Cipollino is given to this marble because of its resembling the color and wave like lines of an onion.

Cipollino or *Cipollino Medium* (American)—Group B.

Vermont Marble Company's Quarry, West Rutland, Vermont.

Various shades of slightly yellowish green with waves of a slightly darker shade and veins of light green to brownish green.

Takes medium polish.

Cipollino American—Group B.

Eastman's Quarry, West Rutland, Vermont.

The three recognized varieties are:

Dark Cipollino—Rather dark but almost a decided green not shading towards olive. The veins of variegated green and occasional greenish white are very numerous.

Light Cipollino—Much similar to the dark, with the exception that the green

shades are lighter and the whitish green veins are more prominent.

Medium Cipollino—This is as the name indicates of the same general tone. The greenish white veins are more prominent than in the dark, while the green is somewhat lighter, and yet both the green and the veins are darker than in the light Cipollino.

Cipollino (American Light)—Group B.

Vermont Marble Company's Quarry, West Rutland, Vermont.

Greenish white to pale green with waves of darker shade and fine veins of from green to dark green.

Takes medium polish.

Cipollino (Canadian)—Group D. (A Breciated Serpentine.)

Bancroft Quarries, South Ontario, Canada.

Consisting of large fragments of dark green serpentine, with occasional paler spots or streaks embedded in a matrix of calcite.

Cipollino D'Elba or *Cipollino Italian*, or *Italian Cipollino*—Group D.

Quarried on the Island of Elba off the Coast of Italy.

Very light pale green with irregular bands and narrow waving veins of darker shade. Takes high polish.

Cipollino de St. Maurice—Group C.

Quarried near Gap in the Upper Alps.

White with large green veins.

Cipollino Grand Antique—See *Cipollino (Swiss)*.

Cipollino (Greek) or *Carystus Marble* or *Marble of Carystus*—Group D.

Quarries on the Isle of Euboea. (Known

by ancients as *Marmor Carystus* or *Carystium*).

Pale green or grayish green with broad and narrow wavy bands of darker shade. Takes high polish.

Cipollino Red

Quarried in Asia Minor.

Deep red with broad bands of pinkish white.

This was a popular stone in ancient times but no longer available.

Cipollino (Swiss) or *Swiss Cipollino*—Group D. Quarries at Saillon, near Saxon, in the Canton of Valais.

Occurs in two varieties:

One known as *Cipollino Grand Antique*, or as *Grand Antique*. Pale green with well defined waves and bands of darker shade.

The other known as *Cipollino Rubanne* or as *Rubanne*. Pale green with light waves and bands. Sawed across the bed. Takes a good polish.

Cipollino Rubanne or *Rubanne*—See *Cipollino Swiss*.

Citron Furuli

Furuli Quarries, Fauski, Nordland, Norway.

Very faint yellow tinted.

Cjellebak (Norway)

Marble deposits are located near this place.

Clarence—Same as *Le Clarence*.

Clarendon A—Group A.

Quarried at Clarendon, three miles southeast of West Rutland, Vermont.

Bluish white with little bands or rows of spots of medium gray shade. (Vermont State Geological Survey).



MANTELS FOR THE HOME

THERE is no other single interior decorative feature in domestic architecture that plays the important part belonging to the fireplace and its mantel. This is true whether the material for this be wood, brick or marble, but it is most especially the case where marble is chosen.

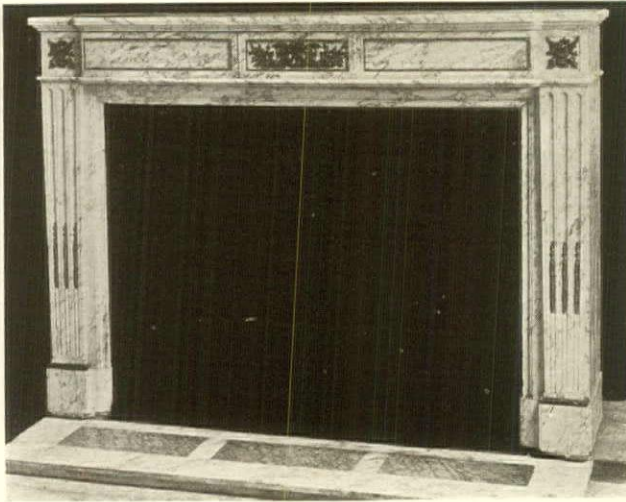
On this and the two following pages are shown various types of mantels for the home, with comments upon their uses, as well as their defects.

The one shown above is suitable for hall, library or living-room. It is built of French Caen Stone, although it can be built of any monotone marble that carves well. Veined,

mottled or clouded marble should never be used for this design, as it would spoil the beautiful harmony of the carved effect. If the fireplace is intended for actual use, then the hearth treatment should be carefully considered, as most light monotone marbles will discolor from hot coals and ashes. For that reason it would be best to use a border of the width of the pilasters and make the field in keeping with the fireplace proper.

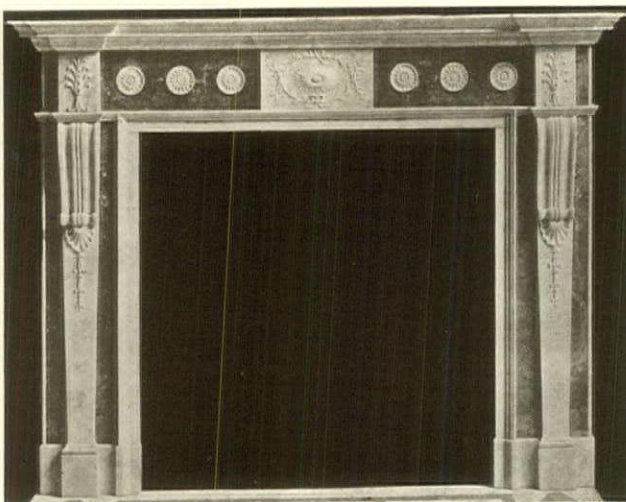
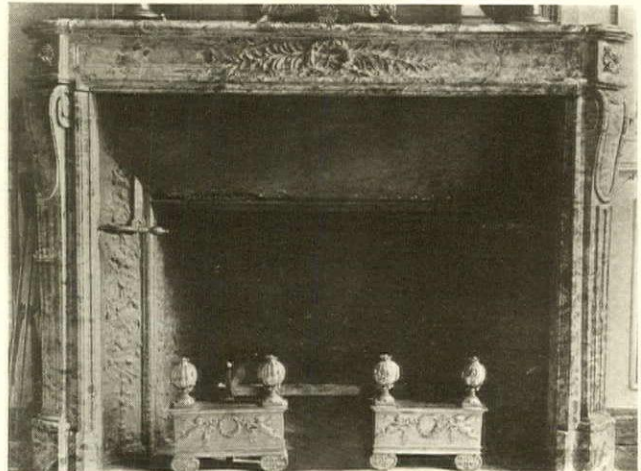
In a mantel of this general character, the size may be varied slightly to suit the conditions, but the total height should not be less than six feet. Anything less than this would render the design ineffective.

Photographs courtesy McClymont Marble Co., Milwaukee, Wisconsin.



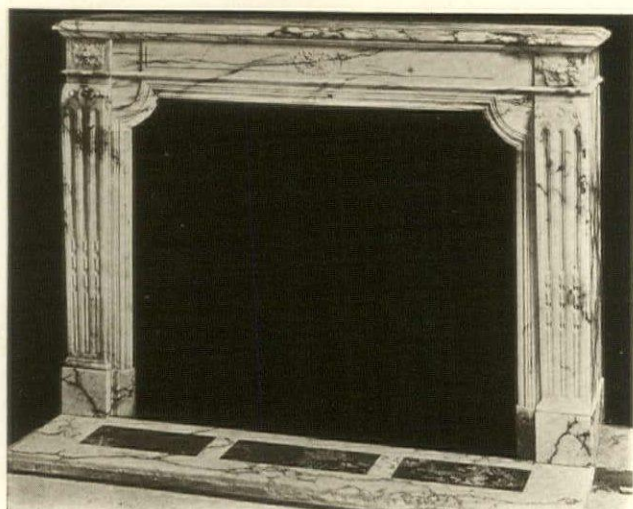
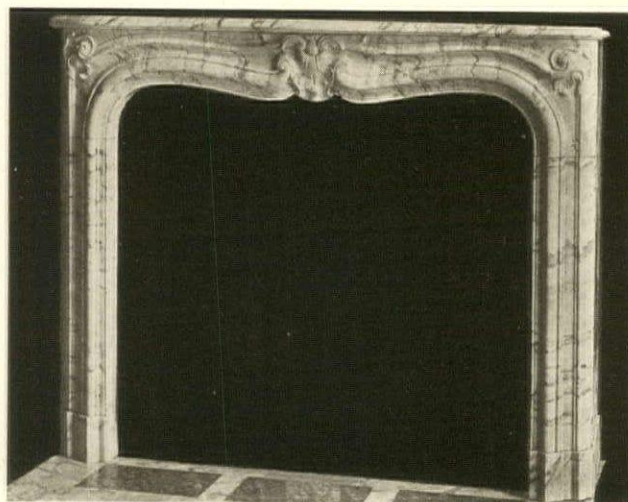
Intended for a moderate sized living-room or large bed chamber. It is built from a dark variety of Second Statuary Italian marble with inlays of Black Belgium. The hearth treatment is rather poorly designed and the effect would be improved if a border of Second Statuary was used on the front and ends only and the field treatment made to correspond with the fireplace.

This mantel may be used in a hall, living-room, library or any other large room where it will harmonize with the surroundings. The material used is Vert Antico from Greece. A good hearth treatment would require a raised border of Vert Antico set at least three inches above the floor and at least one inch above the hearth panels, with the top edges slightly rounded.



Designed to harmonize with the color scheme of a large living-room. This is of Number 2 White Italian, inlaid with Red Verona. The hearth treatment is intended to harmonize with the mantel and should be carefully worked out.

This living-room mantel is of a purely conventional design. It is built of Pavonazzo Italian. The hearth shown is not in keeping with, and probably was not intended to be used with, this mantel. It should be worked out in conformity with the mantel and the other features of the room.



This is intended for a living-room, and the top or shelf treatment could perhaps be greatly improved. It is made of Pavonazzo Italian marble which, because of its natural richness, requires but little ornamentation. This mantel would be improved were the carving, if used at all, done on inlays of pure, cream white marble.

A very much used type of utility mantel, with the addition of conventional ornamentation. This latter does not give its full value, however, because of the interruption of the shadow effect produced by the various veins. If the projection or profile of this mantel had been reduced about one-half and the shelf offset to receive the pilaster, the effect would have been much better. The material used was selected, heavily marked Pavonazzo Italian marble.

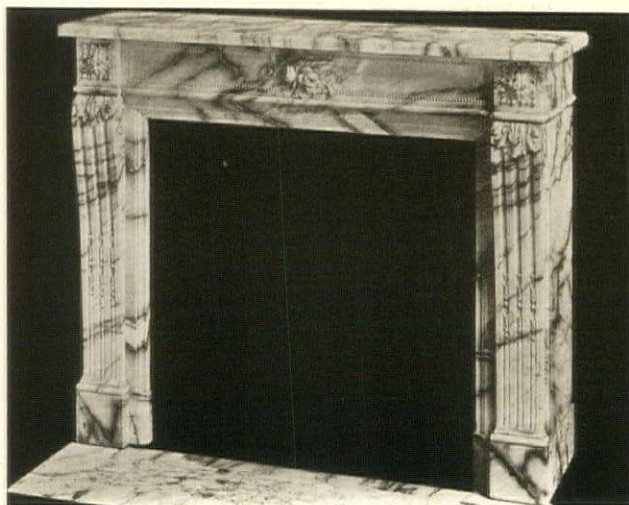




Illustration courtesy E. H. Glidden, Architect, Baltimore, Maryland.

South aisle of choir, in Winchester Cathedral. Built in 1076-93,
it was remodeled later in early Gothic style.

ENGLISH GOTHIC CHURCHES

ENGLISH Gothic was widely divergent from the French, even at a very early period, not only in plan but in structural principle as well. Organic Gothic as we have seen it in France, was not developed in England. "Englishmen depended on Romanesque sturdiness for structural safety, and this inevitably gave a different expression to the building"—(Kimball-Edgell: *A History of Architecture*). There is hardly a fully developed flying buttress system in England and yet, if architecture in England developed more slowly than in France, it developed more uniformly. It was satisfied with the solution of simpler problems, and never sought to attain the boldness of construction exemplified in Amiens and Beauvais. However, as Hamlin says: "In richness of internal decoration, especially in the mouldings and ribbed vaulting, and in the picturesque grouping of simple masses externally, the British builders went far toward atoning for their structural timidity."

In plan, the English building was narrow, and appeared longer, as compared with the French. The transepts were boldly projecting, generally doubled, with the shorter east of the longer. These secondary transepts added greatly to the external picturesqueness, as shown in the cathedrals of Salisbury, Lincoln, Worcester, Wells and Hereford. The east end was usually square, and the choir was often nearly as long as the nave. In height they were comparatively lower than the French, and almost invariably they lacked apsidal chapels.

Many conventional features were incorporated in the plans of the English cathedrals that distinguished them from the churches of the Continent. Cloisters, libraries, halls

and suchlike were common, and chapter-houses and Lady-Chapels were grouped with the main building. The great square stone lantern over the crossing was a striking feature and towers abounded in practically every structure. The height and width of the nave were never abnormal, nor was the clerestory very high. Extreme slenderness of line was never seen and the flying buttress was not of overwhelming importance in the design, often being concealed beneath the aisle roof.

The English system of vaulting was more complicated than the French and exhibited a richness and variety that contrasted with the more organic continental uniformity. Instead of using ribs purely for functional purposes, they gave to them the character of decorative design. The early Gothic vaults such as those in the naves of Chichester, Salisbury, Gloucester and Wells were French-like in their four-part simplicity. Later, however, the vaulting surfaces were broken up into long narrow triangles by having a large number of ribs springing from each support. This is shown in the naves and choirs of Lincoln, Exeter and Litchfield, and in the nave of Westminster. Where the straight rib of the ridge crossed a vaulting rib, there was placed a carved rosette. Minor ribs were introduced and many complicated patterns resulted. The vaults of the choirs of Gloucester, Wells and Ely illustrate this method and it is also shown in the naves of Tewkesbury Abbey, Canterbury, Winchester and Norwich.

The development of the process led to the fan vault, as seen in the choir of King's College Chapel at Cambridge, and the Chapel of Henry VII at Westminster, the Cloisters of Gloucester and many other places. The



Illustration courtesy E. H. Glidden, Architect, Baltimore, Maryland.

Ely, showing West Front and Central Octagon.

multiplicity of the ribs, resembling an inverted pyramidal mass at each point of support, formed above elaborate patterns of tracery that were far more decorative than functional, and less satisfactory than the earlier ribbed vault. At the junctures of the ribs and ridge either paneling was used, or keystones shaped like long stone pendants were inserted.

Another form of ribbed vaulting that was employed in the thirteenth century is seen in the eight-sided chapter houses connected with the cathedrals of Lincoln, Northminster, Salisbury and Wells. In each a central column supports the roof through ribs radiating to the sides and angles of the polygon, the whole interior representing a most logical structural entity and affording a striking example of the excellence of English Gothic at its best. The Ely Cathedral has, at the intersection of nave and transepts, a noble octagon the full width of the aisles, whose groined and ribbed vault reaches clear

to a central lantern that shows from within as well as from without. This was built by Alan of Walsingham in 1337 after the fall of the central tower.

Very few English cathedrals are wholly of one architectural style. Remodelings at different periods resulted in admixtures of Norman and Gothic, often of great merit. Salisbury Cathedral, 1120-1258, was the first church designed and built entirely in the Gothic style. Durham, Norwich and Oxford are wholly Norman but for their Gothic vaults. Ely, Gloucester and Hereford have Norman naves and Gothic choirs. Win-



Illustration courtesy E. H. Glidden, Architect, Baltimore, Maryland.

The Central Tower of Lincoln Cathedral,
a church of the thirteenth century.

chester has a Norman nave with late Gothic details added, and a pure early Gothic choir. So it goes with practically all the better known English cathedrals.

Like the French, English Gothic developed through stages more readily distinguished by tracery forms. It is common to divide the whole into three periods. The first was called the Early English or Lancet period, and was marked by its simplicity. Sculpture was scarce, decoration restrained, and the designs pure and dignified. The windows, at the beginning of the period tall and narrow (lancet windows), were grouped by twos and threes, though sometimes more, as in the York north transept, where we see five. The form of the openings, at first paramount in the design, became, as in France, subordinate to the pattern of the stone framework of circles, bars, arches and cusps.

Construction was sturdy. The Norman massiveness was distinguished,



Illustration courtesy E. H. Glidden, Architect, Baltimore, Maryland.

Fan-vaulting (late Perpendicular), in the nave of King's College Chapel, at Cambridge.

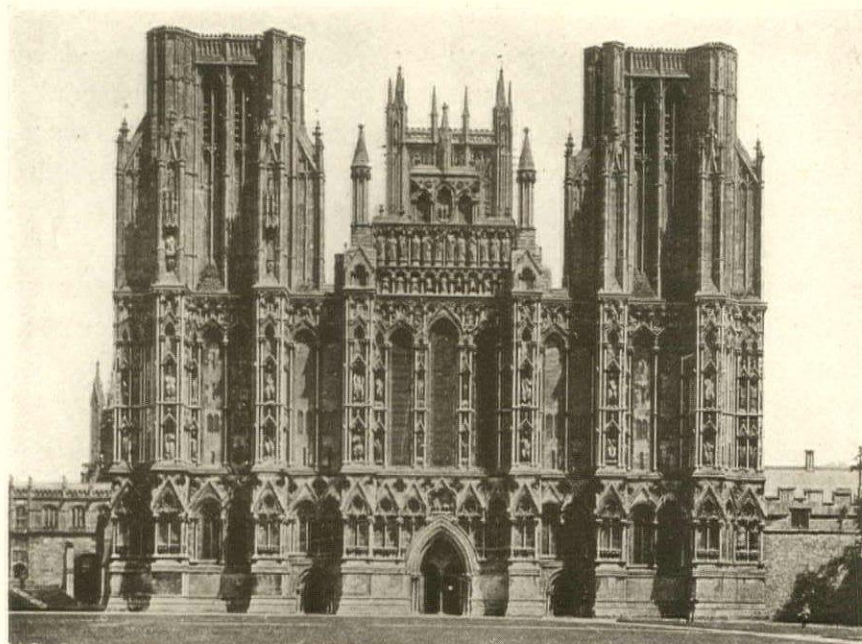


Illustration courtesy E. H. Glidden, Architect, Baltimore, Maryland.

West Front of Wells Cathedral (thirteenth century).

however, by clusters of shafts about the round piers. These shafts were mostly of the dark Purbeck marble that seemed such a favorite with the English builder. The more important parts of Canterbury, Lincoln, Wells and, most of all, Salisbury, were in this style.

The latter part of the thirteenth century saw the abandonment of the severity of the Early English style and the introduction of the Decorated style (1260-1360),

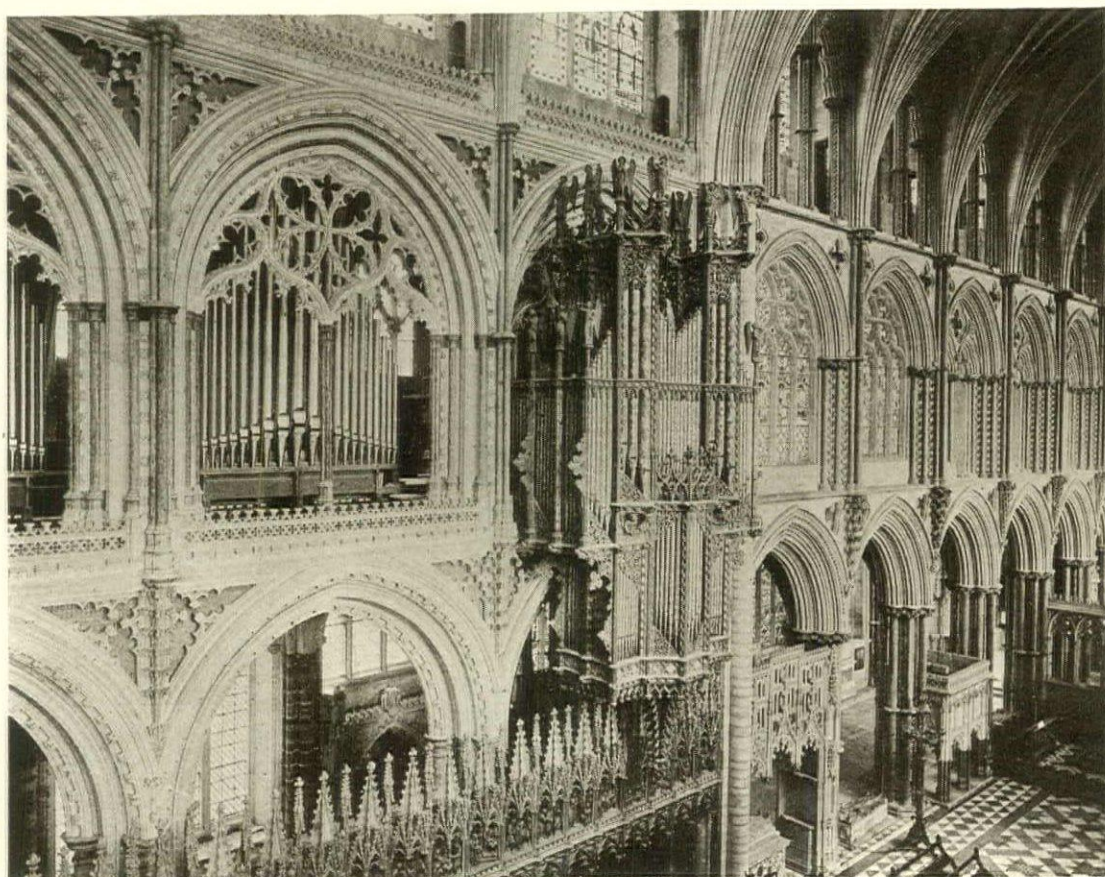


Illustration courtesy E. H. Glidden, Architect, Baltimore, Maryland.

Notice the decorative elaboration of design in this triforium of Ely Cathedral.

also called the Geometric and the Curvilinear (this in its later aspect). This period was marked by a profusion of decoration and an increase in the number of ribs, as well as by an enrichment of complicated mouldings. In particular, bar tracery that somewhat resembled the French Geometric tracery, was freely employed. This, at first following simple lines, soon grew into flowing tracery, with riotous lines of double curvature, resembling the French Flamboyant, though considerably simpler. Examples of the Decorated style are found in the famous Angel Choir and nave of Lincoln, the side aisles and triforium of the choir of Ely, the west front of York Minster and in Wells.

The last and most original of the English Gothic periods was the perpendicular, which

extended from 1360 to well into the sixteenth century. It was distinguished by an emphasis laid on vertical and horizontal lines. Ribs were extended to the pavement, fan vaulting extensively used—as was also the four-centered arch—and openings were enlarged considerably and filled with tracery in which the mullions were carried through to the top of the arch, and crossed at intervals by horizontal transoms. Rectangular paneling became general and walls and vault surfaces were treated along the same lines.

The arch at this time was given a new form. It was flattened, struck from several centers, and frequently had a much depressed point, to fit under the flattened apex of the vault. At the same time the windows,

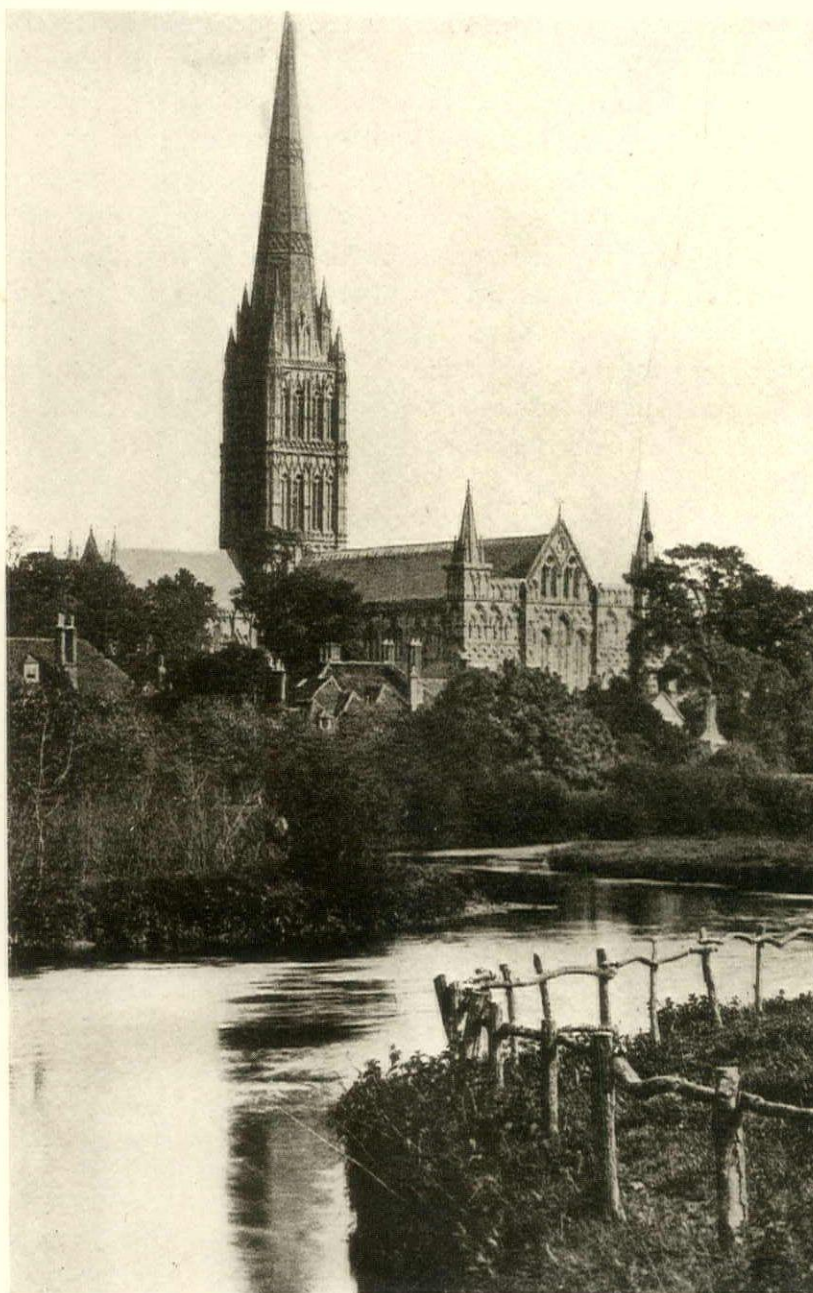


Illustration courtesy E. H. Glidden, Architect, Baltimore, Maryland.

Salisbury Cathedral was built about 1245; the Spire about 1300.

especially of the square east ends, were made of tremendous size, so that the ends of the churches were practically huge walls of glass. The chapels of St. George at Windsor, Henry VII at Westminster and the Cathedral at Gloucester offer very complete specimens of the Perpendicular style. The east window of Gloucester measures 38 by 72

feet, dimensions more prodigious than anything before attempted in England.

The fronts were never as impressive as those of the French and were practically mere decorative screens hiding the arrangement behind them. Effective they may have been; as entrances they were not to be compared with the noble façades of Notre

Dame, Rheims or Amiens. Occasionally sculpture was used, but not nearly as freely as in France, not even within, where the English church offered its best. The chief exterior advantage of which most of these buildings could boast was in the matter of location, for they were usually placed on a fine site which received scrupulous attention. They are not, even now, obscured by the unsightly structures that are permitted to crowd about the Continental churches. Perhaps York has the most elaborate west front of any on the island, but those of Lincoln and Peterborough are more interesting, while Litchfield and Wells are beautifully designed.

As mentioned before, the central towers were prominent features of the exterior design. The majority, internally, formed lan-

terns, adding dignity to the crossing; while externally, they usually appeared as massive square towers. The finest of these was at Canterbury, but other notable examples were at Durham, Lincoln, York and Gloucester. Salisbury, Litchfield and Chichester have spires over the lantern, the first of these rising 414 feet from the ground. Norwich has a Norman tower with spire.

The interior was distinguished from the French by three peculiarities of design. These are: first, the abundance of fine mouldings in the pier arches; second, the elaborate decoration of the triforium; third, the varied treatment of the clerestory. These three combined to give the long low English church a repose and grace that contrasted sharply with the impression of majesty and power conveyed by the French cathedrals.



Illustration courtesy E. H. Glidden, Architect, Baltimore, Maryland.

Canterbury Cathedral.

THE MINNESOTA CAPITOL

TO the average American of the Eastern States, Minnesota seems rather far removed from the centers of civilization; and the statement that it possesses a capitol building that ranks with the finest in the country is a matter of distinct surprise. However, the St. Paul structure is certainly worthy of such a classification and its location upon an eminence rising some two hundred feet above the Mississippi River adds to the dignity of this white marble edifice.

Below spreads out the picturesque city of St. Paul, while the surrounding country presents a succession of gently rolling hills, winding rivers and silvery lakes. In the daytime, bathed by the golden sunshine, the purity and delicacy of the impressive architectural proportions of the Minnesota capitol make it the glory of the North Star state.

The first capitol of the state, then a territory, was located on Tenth, Cedar, Market and Wabasha Streets. After admission to the Union, the capitol of Minnesota took fire and was destroyed March 1, 1881. The second capitol, built upon the same site, was opened January 4, 1883. In 1893, plans for a new capitol were begun, including the appointment of a commission to select a site, provisions for a ten-year tax to secure the building funds, and the selection of an architect. Ground was broken on May 6, 1896; the cornerstone laid July 27, 1896; the finishing touch added in 1902; and the building occupied by the legislative assembly on January 3, 1905.

It is built upon the lines of the Roman Renaissance, of grayish-white Georgia marble. The architect, Mr. Cass Gilbert, of St. Paul and New York, departed from the conventional when he omitted the Greek pedi-

ment from beneath the large dome. Marble columns are ranged in pairs around the drum, while its walls are penetrated by pedimented windows. Above is a circular lantern topped by a gold ball, its smaller marble columns tending to carry out the general effect and accentuating the unity of the design. The dome itself rests squarely upon the central part of the main structure. The plan is that of a very long rectangle, with a short north wing almost square extending from the center, the east and west wings themselves being about twice as long as wide.

The approach to the building consists of broad terraces, with secondary stair-flights to break the otherwise too sharp incline. The main entrance is through a central pavilion with three large arched openings, while extending over the second and third floors are double-columned arched open loggias. Two square pierlike ends, one on each side of the openings, strengthen the front and, with their truncated pyramidal form above the roof, suggest the sites for future heroic statuary groupings. The whole façade forms a parallelogram, with the curves of the arched openings repeated and magnified in the lines of the dome. The roof is relieved by flat glass domes upon the side pavilions, while a repetition of the pediment over each of the four windows, two on the central and one on each of the side pavilions, co-ordinates the various elements.

Not the least of the unusual features of the exterior treatment is the windowless attic above the loggias of the main pavilion, with its six statues executed in white marble by Daniel Chester French, one of the greatest sculptors of the day. These figures attest a close study of Greek art and have

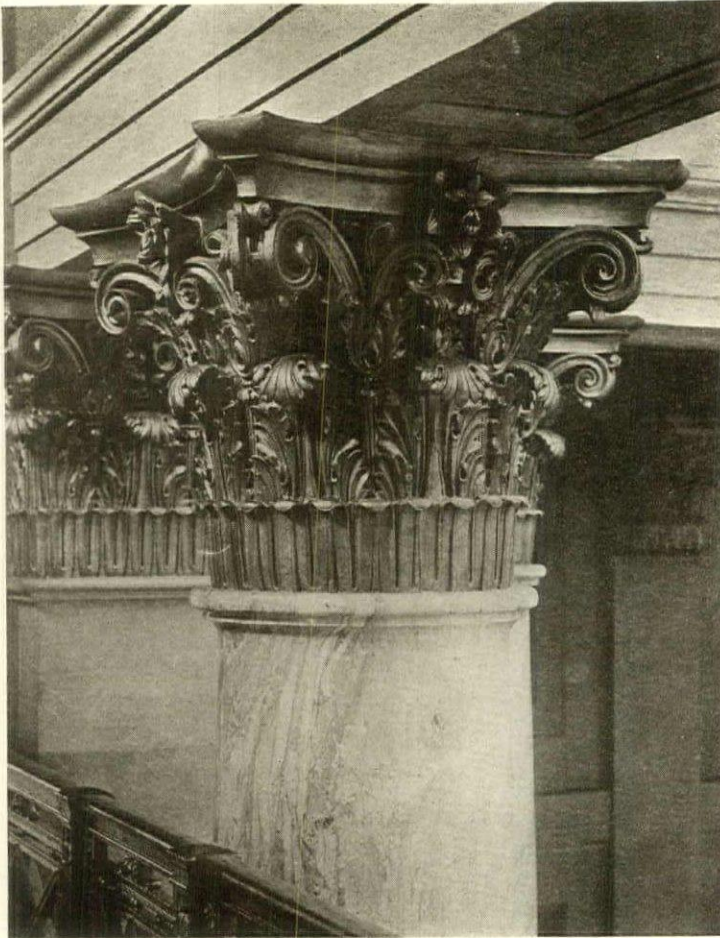


Illustration courtesy Julie C. Gauthier, St. Paul, Minn.

The architect has introduced into the beautiful Corinthian capitals of the second floor a rosette representing the moccasin plant, the recognized flower of the State of Minnesota.

added much to the already large reputation of the artist. Heroic in size, they depict the six virtues essential to good citizenship—Wisdom, Courage, Bounty, Truth, Integrity and Prudence.

Above the attic is a square pedestal at the base of the dome supporting a quadriga of gilded copper, by French and Edward Potter, representing Prosperity standing upon a triumphal car drawn by four horses led by two young women. This group is one of the largest of its kind in the country.

However pleasing the exterior, the interior is at once both beautiful and dignified, and it is here that the success of the idea of

directing the various artistic activities through a general Board of Design is most evident. This Board, made up of Mr. Gilbert, the architect, Mr. French, Mr. LaFarge, Mr. Garnsey, Mr. Blashfield and Mr. Simmons, was the final jury to settle any questions of dispute. It was not that there was any lack of harmony among the various artists; it merely gave them assurance that there would be no interference by non-professional authorities. This harmony of effort resulted in a harmony of decorative detail that is, unfortunately, rarely found in our public buildings.

The dominant color note is the dull buff, almost pink, tone of the dolomitic marble used so freely in the walls of the rotunda and corridors, as well as in the piers, pilasters, arches and entablatures. This material came from the local quarries and is known as Kasota and Mankato stone. The many other marbles used were chosen because they either blended or pleasingly contrasted with the color of

these local marbles.

In the center of each façade on the first floor is an entrance opening into a large vestibule with corridors extending the length and width of the building, and crossing at the rotunda. This has a convex curved floor of marble, with a large glass star in the center that serves both as a decoration and as a means of lighting the rotunda basement. Above is an encircling balustrade of Hauteville and Skyros marble from France and Greece. The walls are octagonal, four of them extending upwards to form the piers that support the dome. These piers contain niches in which are placed statues



Illustration courtesy Julie C. Gauthier, St. Paul, Minn.

View from top of West Staircase.



Illustration courtesy Julie C. Gauthier, St. Paul, Minn.

Exterior of the Minnesota State Capitol, at St. Paul.

of the state heroes of the Civil War. Above each niche is a panel of Old Convent Siena marble from Italy, and below is a marble bench of Skyros from Greece.

The four pendentives over the piers are filled with paintings by Edward Simmons, representing the Civilization of the Northwest, mostly in deep blues and gold to match the colors of the dome itself. These were originally done upon a seamless canvas in the artist's studio in Paris, France, and afterwards fastened to the curved surfaces

of the wall by a thick coat of white lead that acted as a paste. By this method of treatment, the paintings can be removed without damage in case of fire, rebuilding or for other reasons.

The first floor corridors have vaulted ceilings decorated with pictures in the form of bands, circles and rectangles of native grains and fruits, with panels of blue and violet. On either side the main entrance are two finely carved benches of white Italian marble, the gift of one of the members of



Illustration courtesy Julie C. Gauthier, St. Paul, Minn.

View of Senate Chamber, in center of West Wing.

the State Capitol Commission, Mr. John DeLaittre. The floors are of stone inlaid with designs in the blue and green veined marbles of Georgia and Tennessee, and the dark red Numidian from the Nile Valley. The door casings are of French Echaillon marble, delicate and beautiful in color, but hard in texture, and toning in excellently with the Kasota and Hauteville.

On either side of the rotunda is a large stairway, one in the west and the other in the east wing, built almost entirely out of

Hauteville marble, which resembles Kasota but takes a higher polish. Skyros marble is used for the balusters, while the panels on the landings and the spandrels between the arches at the sides are Breche Violette and old Convent Siena from Italy.

Surrounding the stairwells on the second floor are thirty-six columns of Breche Violette, very highly polished. The ones at the east end of the corridor, and in front of the entrance to the Supreme Court Room are mottled greenish-gray. Those at the west

end are much lighter, with larger mottled spots. All have bases of Hauteville and Corinthian capitals of dull gold. These thirty-six columns, lighted by the amber-colored semi-cylindrical vaults above the stairways, form a striking display of violets and soft greens and yellows.

Twelve small lunettes symbolizing the various industries of the state are placed at the base of the skylight vaults. Other paintings are found in profusion, one, over the entrance to the Supreme Court Room, and another, over the west stairway, being particularly noteworthy. Under the rotunda on the ground floor is a timbrel vault which has the peculiar property of echoing the steps of anyone crossing the floor, giving him the impression of someone following directly back of him. Strangely enough, it can only be heard by the person walking. On the same floor is a restaurant at the extreme end of the north corridor designed after the style of a German Rathskeller.

The Governor's Reception Room, off the west corridor of the first floor, is extremely ornate. One of its chief features is a mantel of unpolished Fleur de Peche marble from France, with a base of Italian Levanto marble. Here, too, are found the historically accurate paintings by Blashfield, S. M. Arthurs, F. D. Millet, Howard Pyle, D. Volk and R. H. Zogbaum.

Ascending to the second floor, we find the Senate Chamber in the center of the west wing, with its display of what is easily the most beautiful marbles in the building. Columns, pilasters, door-casings and base are all of French Fleur de Peche, the soft creamy tone at times deepening to yellow and speckled with strong violets and warm reds. Splendid paintings by Blashfield and four lunettes by Willett are quite in keeping with the fine decorations of this room.

The Senate Retiring Room adjoins the

Chamber and here two marble fireplaces of red Numidian harmonize with the purples and reds of the draperies, ceilings and panels.

In the east end, on the second floor, is the Supreme Court Room, severely dignified and richly but simply furnished. Four La-Farge paintings, one in each of the recessed lunettes at the top of the sides, lend great charm to this apartment. Behind it is the Justices' Consultation Room, a copy of the Supreme Court Room in Independence Hall in Philadelphia, where the Declaration of Independence was signed. Its white marble mantel and white woodwork are exactly suited to the mahogany chairs and table and gold-framed portraits.

The north wing contains the House of Representatives and its Retiring Room. The Speaker's desk is flanked by white Vermont marble columns, while above is a large open arch. The mantelpiece of the Retiring Room is of unpolished Numidian marble. The ceiling is elaborately beamed, with carved soffits and brackets. This room is a delightful reproduction of a chamber in some old Italian palace or French chateau of the time of Francis I.

The cost of the edifice alone was \$3,250,000. Including the expenses of the land and its improvement, boiler house, site and tunnel, furniture, decorations and other items, the entire sum expended was \$4,500,000, the amount appropriated by the Legislature. The length from east to west is 433 feet, with an average width of 120 feet. The central portion, which includes the north wing, is 228 feet from north to south. The outer walls are 69 feet high, while the dome extends 220 feet into the air, with a rotunda 60 feet across. 10,000 electric lights are used, the illumination and heating coming from an efficient plant situated at a distance of two blocks, and completely out of view on the decline of the hill.

SAFER WALKWAYS

NOTE—The National Engineering Council called for a conference of those interested in making walkways safer against slipping and tripping. The National Association of Marble Dealers offers the following information as it applies to marble—and follows with specifications incorporating what it considers proper standards, these latter to be made the basis of recommendation to municipalities for incorporation in their codes of building laws.

DEFINITIONS AND INFORMATION

(1) Walkways with surfaces in which marble is the sole or principal material subject to the wear and tear of foot traffic, include the following:

(a) Floors and pavements finished with marble slabs, or with marble tiles with or without marble border.

(b) Floors and pavements finished with marble mosaic, with or without marble border.

(c) Floors and pavements finished with marble terrazzo with or without border of marble strips or of marble mosaic.

(d) Treads and platforms of stairways made entirely of marble in some form, or finished with it, in some form. So far as known, marble mosaic is never used for treads. But steps may be made of terrazzo moulded solidly to shape, and platforms, like floors, may be finished with marble in any form.

MARBLE TILES

(2) These are merely small thin slabs of marble rubbed or cut to suitable size and shape. In sizes varying from 6 inches by 6 inches to 12 inches by 24 inches and not exceeding about 2 square feet in area, such slabs are called tiles. In sizes larger than this, they are called "floor slabs." The long narrow strip used as boundaries and subdivisions in floors finished mainly with marble tiles, mosaic or terrazzo, are known as "border."

The distinction between "slabs" on the one hand, and "tile and border" on the other, is due to the fact that tiles within the

limits of size given, and even rather long strips of narrow border, can be produced in considerable quantity from pieces cut from larger slabs in executing other work, or from other material which may not yield merchantable stock except in the relatively small sizes used for tile and border. "Tile and border" therefore constitute to a certain extent a by-product of the industry, and this influences the price at which they are sold.

If pieces of border are more than 12 inches wide, or more than 6 feet long, or contain more than about 4 square feet, they cannot ordinarily be obtained except from large slabs of merchantable stock—and thus cease to be, in any sense, a by-product.

If tiles exceed 12 inches in their least dimensions, or contain more than 2 square feet, they likewise cease to be obtainable as a by-product in any appreciable quantity.

Small tiles, less than 6 inches by 6 inches, used in pattern floors, are usually known as "dots."

Tiles and border, in the sense understood in the trade, are made from stock that is from $\frac{7}{8}$ inch to $1\frac{1}{4}$ inches thick, as it comes from the saws; the finished material will vary in thickness from about $\frac{3}{4}$ inch to $1\frac{1}{8}$ inches; but at least 90 per cent will ordinarily run about $1\frac{1}{16}$ inch. If specifications require thicknesses beyond those limits—or any perfectly uniform thickness—the advantage of using a by-product is lost, and in the opinion of the trade, no useful object is accomplished.

MARBLE MOSAIC

(3) This material consists of marble sawed or broken to a generally rectangular shape, and of such sizes as to present a surface in the finished floor varying from about $\frac{3}{4}$ inch by $\frac{3}{4}$ inch to not more than $1\frac{1}{2}$ inches by $1\frac{1}{2}$ inches. The thickness varies from a little less than $\frac{1}{2}$ inch to $\frac{3}{4}$ inch, $\frac{7}{8}$ inch or sometimes 1 inch. For elaborate designs, pieces of triangular or other shape are often necessary.

In laying mosaic floors, it is customary first to arrange the pieces, face down, on sheets of paper large enough to contain units of the floor of reasonable size. The pieces of marble are made to adhere to the paper by some adhesive material which will lose its strength when wet. The units, so formed, are laid in place paper side up, on a bed of fresh cement mortar, and the paper is stripped off as soon as this can be done without plucking out pieces of the marble. Usually the work necessary to connect adjacent units is done by placing the intervening material, piece by piece, by hand. More or less work of this kind is nearly always necessary to complete the job.

MARBLE TERRAZZO

(4) Properly speaking, this is a finished wearing surface of marble concrete. Actually it often consists of a bed of cement mortar in which marble chips have been spread and tamped in while the mortar is soft. It is this latter type of cheap work which has often given a bad name to a type of floor which, when properly executed, is capable of rendering excellent service. When properly made, however, it is almost as expensive as marble tiles.

For the best results, the aggregate for the marble concrete should consist of relatively coarse pieces (such as pass a $\frac{3}{4}$ -inch or 1-

inch ring) mixed with enough finer material (marble crushed to a size to pass $\frac{1}{4}$ -inch screen and be retained on a $\frac{1}{8}$ -inch screen) to fill the voids between the larger fragments. This mixture of aggregates should be made into concrete with neat Portland cement and water, spread and tamped into place so that when finished, there shall be at least $1\frac{1}{4}$ inches of perfectly homogeneous marble concrete over the entire area where used. When terrazzo is made entirely of the smaller sizes, the pieces of marble will soon begin to pluck under heavy traffic, producing an uneven and dangerous surface.

(5) When any walkway surface is to be finished with marble, the following points should be considered:

Tiles, slabs and mosaic must be set in a bed of stiff mortar, otherwise accurate laying is impossible; soft mortar will not hold the surface true while the cement is setting. A certain minimum thickness of mortar—not less than 1 inch—is necessary to enable the marble setter to set his pieces of marble and bring them down to a solid bed with upper faces true and at the proper level.

Conduits, pipes, etc., that are run over the rough floors under the marble should be securely and rigidly fastened down and the general level of the rough work should be such that the minimum thickness of bedding mortar can be everywhere secured over the highest points of such conduits, pipes, etc. It is better to completely bury all such features in a bed of rough concrete finished at such a level as to afford the requisite space for bedding and laying the marble.

(6) Where the foot traffic is very heavy and unusual wear and tear are to be expected, it is very desirable to finish all floor areas so exposed with the same kind of marble; or if different kinds are used and combined into a pattern, the designer should

confine himself to kinds that offer equal resistance to abrasion.

(7) Stairways subject to abnormally heavy traffic should present themselves, top and bottom, squarely to the stream of traffic and all treads should be completely contained between the strings. Otherwise oblique streams of traffic, use of treads spreading out around newel posts, etc., will result in unequal density of traffic. If stairways are wide, intermediate hand rails are of assistance in securing uniform density. Unequal density of traffic will finally produce unevenness of surface.

(8) Method of INSTALLATION and FINISH of marble walkway surfaces. From the standpoint of satisfactory service generally and especially from that of safety against tripping and slipping, all types of marble walkway surfaces should be so installed that individual pieces will neither pluck out, become loose, nor wear unevenly under traffic; the finished surface should be such that it will not be slippery and can be easily cleaned; it should be so maintained that the surface in itself shall not become slippery nor uneven.

SURFACE FINISH

(9) It has become customary in many cases, to specify a "hone finish" for all kinds of marble walkway surfaces. Strictly speaking, the "hone finish" is the final step in preparing marble that is to be polished, for the operation of "buffing" or polishing proper. It gives a dull gloss and leaves a very smooth surface, but a real hone finish in a hard marble especially, may be appreciably slippery.

What used to be called a "fine sand finish"—which was the smoothest finish obtainable, by using fine sand grit—was just as good as a hone finish from every other standpoint and it was less slippery. However,

neither hone nor sand is the principal abrasive used, since the introduction of artificial abrasives. It is considered that the best results for marble walkway surfaces in public places will result from specifying that they shall be finished with "No. 80 grit abrasive." This gives a finish which is not slippery, is easy to keep clean, and in most cities is nearly the same as the final finish resulting from the gritty material on the feet of the users.

The hone finish and fine sand finish are still used in the shop. In the case of stair-treads, which are very rarely rubbed after being installed in the building, it is more in accordance with the average state of affairs to call for a fine sand finish. Unless something else is specified the treads will be given a fine sand finish on the rubbing bed and nothing further will be done to the surface after they are set in place, except, of course, to clean them off.

(10) Tile and border should be not less than $\frac{3}{4}$ inch thick, and the edges should be "full" for at least $\frac{1}{2}$ inch from the top. If the edges are "undercut" too near the top surface, under heavy wear and tear, the thin edges crumble and wear away, the joint grows progressively wider and irregular, and inequalities finally result which materially increase the danger of slipping and tripping.

Tiles cut to size with an abrasive wheel generally have full edges for the entire thickness; those that are squared up on rubbing a bed generally have undercut edges. Too much undercut has the disadvantages just named; but a little undercutting makes it easier to bed the tile accurately, because it leaves a little space to take up surplus mortar when the tile is tamped into place. It also facilitates perfect groutting and increases the adhesion between the tile and the mortar below it. Good jobs can be pro-

duced with both kinds of tiles. It is best to let the marble man use either, requiring all tiles to have full edges for $\frac{1}{2}$ inch. By the time traffic has worn away $\frac{1}{2}$ inch, it is time to replace the floor, in any case.

When large slabs are used, it is well to make at least $1\frac{1}{4}$ inches thick, to enable them to stand ordinary handling in the process of bedding; once well bedded, nothing is gained by making them thicker than tiles. But getting them down to a solid bed on stiff mortar is a delicate operation, unless they are a little thicker than tiles. When the slabs are more than 18 inches wide, and more than 4 feet long, or contain more than 6 square feet, it is well to specify the greater thickness.

After the underlying mortar bed has set hard enough to bear the weight of the workmen, the joints of all tile and slab floors should be thoroughly grouted with neat cement, brushed in until all joints, including spaces under the edges of undercut tiles, are solidly filled with grout. After this has set, the floor should be cleaned and rubbed until it is perfectly clean and has the finish due to No. 80 grit abrasive. This operation, however, should be deferred until the owner or general contractor is prepared to take over the floor as finished and to be responsible for any damage done by other trades.

The exact significance of the expression "solidly bedded" should be explained. In the case of tile and border actual solid contact with the mortar bed can be secured over 90 per cent of the area of each individual piece. For larger pieces, the mortar bed must be furrowed or otherwise prepared to permit of tamping the slab down to proper level after it is otherwise in place. It is impracticable to avoid having here and there small areas in which there is lack of contact between the slab and the mortar bed. No practicable

method will completely avoid this—it does no harm if the work is well done, and it is useless to strive for a purely theoretical standard of no practical value.

The custom, often followed, of tamping tiles and slabs with a rod or other instrument to see if they sound hollow, is often misleading. The structural floor, even if of reinforced concrete, will nearly always give forth a hollow sound if so struck, both before and after the tiles or slabs are in place. Many good and well bedded tiles have been ripped up because the structural floor was a sounding board. It would be better to require the marble contractor to guarantee the floor against loose tiles or slabs for one year. If he himself does not loosen any of them in the final rubbing, it is highly improbable that any of them are imperfectly bedded.

The joints in marble floors should be held down to $\frac{1}{16}$ inch without undue cost. To make them thinner than this is not only extremely expensive, but if the tiles and slabs are well bedded and either part of a large area or confined between unyielding walls, expansion due to inevitable variations of temperature will either loosen individual pieces, or else cause spalling along the upper edges. To completely avoid the latter trouble, it is better also to have the floor extend under the base, instead of having the base set first and the floor finished against it. Incidentally the method recommended is somewhat less expensive than the other. The differences of opinion on this subject could all be reconciled by always using a coved border.

CRACKS IN MOSAIC AND TERRAZZO

(11) To avoid expansion and contraction cracks in mosaic and terrazzo floors, all areas should be divided into sections of moderate size—not greater than about 6 feet by 6 feet, which should be laid separately. The

best results are obtained by using marble strips and border for the subdivision of mosaic and terrazzo floors.

(12) In all kinds of marble floors, consideration should be given by the designer to the location and distribution of structural beams and girders. Unless these are well imbedded in the masonry of the structural floor, they will often cause cracks in the finished floor. Subdivision into units so as to bring the strips and border directly over such beams, may confine their effects to a slight expansion of straight joints, in cases where the effect cannot be altogether avoided.

STAIRWAYS

(13) Nosings of stair-treads should not be rounded at the upper corner to too great a radius; otherwise there is some danger of slipping in descending the stair. A perfectly sharp corner is easy to snip and thus may also become a source of danger. Rounding to a radius not less than $\frac{1}{8}$ inch and not more than $\frac{1}{2}$ inch (or in extreme cases $\frac{3}{4}$ inch) will give satisfactory results.

Winders are dangerous in any stairway; treads less than 10 inches wide are dangerous. Spiral stairways of monumental design should have the minimum width of tread not less than 10 inches if possible.

CLEANING

(14) Marble floors and walkway surfaces of all kinds should be cleaned without the use of soap. Soap always contains more or less uncombined fats; these will be slightly absorbed and will adhere to the surface, finally forming a thin film of lubricant, and the surface will become slippery. Clean water, or water containing ammonia, caustic soda, sodium carbonate or similar alkalis, with or without bleaching agents, like chloride of lime—or cleaning powders containing these

substances (but no soap or grease in any form)—are effective cleansing agents for marble, and will not injure it nor change the texture of the surface. If marble of any kind becomes stained or is allowed to get into a bad condition from neglect, experts in the marble work should be called in. But the regular use of proper cleansing agents will keep the material in good condition at very small cost. It is well to go over marble walkway surfaces occasionally with floor rubbing machines, to keep and maintain the proper surface finish. If this is done and the surface is kept clean and dry, slipping should be a rare occurrence and tripping, due to the condition of the surface, should not occur at all.

SPECIFICATIONS FOR MARBLE WALKWAY SURFACES

(Floors, Pavements and Platforms finished with Marble Tiles or Slabs.)

Marble Tiles and Border: Marble tiles and border must be not less than $\frac{3}{4}$ inch thick when finished; the edges must be rubbed, or otherwise finished, true and at right angles to the upper face, and must be "full" for at least $\frac{1}{2}$ inch. In the case of white marbles and all other marbles in which sticking and patching are not allowed, tiles must be free of cracks, seams or veins of soft material, such as schist, and the amount of clouding or variation of color must come within the limits of the grade specified.

Tiles made of those colored marbles, in which patching and sticking are necessary, must conform in this respect to the recognized commercial standards applying to the marble of which they are made. If these permit of sticking, filling, etc., this work must be thoroughly done, so that the tiles shall remain intact under wear and tear.

Pattern Floors: Where dots and tiles or other forms of pattern floors are used, in

places where the traffic is severe, as in railway stations, arcades, etc., the different marbles used together must be equal in resistance to abrasion, so as to wear equally. Generally, in such places, floors of simple rectangular tiles, with or without border, all of one kind of marble, are preferable from the standpoint of safety against slipping.

Setting of Tiles: Floors that are to be finished with marble tiles must be finished to such a level and with such accuracy that the thickness of mortar under the tiles shall at no point be less than 1 inch nor more than 1½ inches.

Tiles shall be set in a bed of mortar composed of Portland cement and sand in the proportions of one and two. The mortar must be mixed so as to be quite stiff; it should require severe ramming to bring the moisture to the surface. Tiles must be set with joints not exceeding $\frac{1}{16}$ inch unless a wider joint is specified for artistic effect. The joints shall be grouted with neat cement. After the floor has set sufficiently hard, the surface shall be rubbed to a final finish with No. 80 grit abrasive.

Maintenance: Marble tile floors must not be cleaned with soap nor with any powders containing soap (liquids or powders based on alkalis like ammonia, caustic soda or washing soda, with or without bleaching agents, like chloride of lime, may be used).

Marble Slab Floors: Marble slabs more than 4 feet long or more than 18 inches wide and containing more than 4 square feet, intended for walkway surfaces, should be made from 1¼-inch slabs, if they are to be solidly bedded, like tiles. In this case except for the greater thickness, the above specifications for the tile floors apply in every respect to floors finished with marble slabs.

If, in such cases as stair platforms, a marble slab is not solidly bedded, its thickness

must be determined so it will have the necessary transverse strength.

Marble Stairs: For use in public places where severe traffic is to be expected, and for the stairways in office buildings, hotels, department stores, and other buildings where the stairways may have to be used as emergency exits, winders must not be used; but this is not intended to prohibit the use of spiral stairways in which the minimum width of any tread, including the nosing, is not less than 10 inches. Ten inches should be the minimum width of any tread.

Finish of Treads: Marble treads for use in public places should have a No. 80 grit abrasive finish or an equivalent sand finish and the nosing should have its upper edge rounded to a radius of not more than one-fourth to one-half of an inch.

Soap must not be used in any form in cleansing marble treads in public places. If metal non-slip treads are applied to marble treads they must be countersunk so as to have their upper surfaces flush with the upper surfaces of the marble treads.

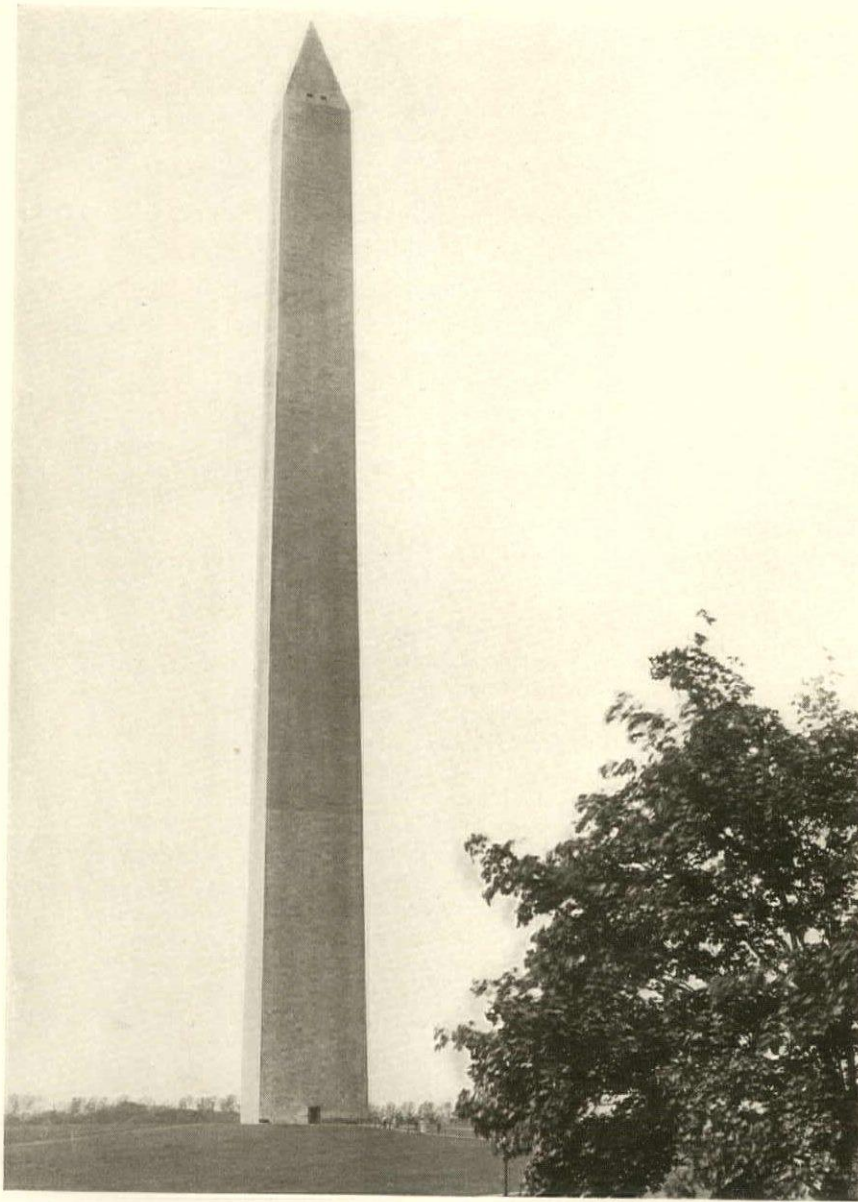
Marble Mosaic Floors: For use in places where heavy traffic is to be expected, the thickness of the mosaic should be not less than ¾ inch. If different marbles are used together, to produce a pattern, they should be so selected as to wear evenly under the traffic; the final finish should be No. 80 grit abrasive finish and soap should not be used for cleansing. To avoid contraction cracks, it is recommended that marble mosaic floors be divided into simple rectangular patterns by border or strips of marble, and that the work be done in units.

Marble Terrazzo Floors: These should consist of a finishing coat of marble crushed and screened to size, made into concrete spread in a thin layer, tamped down and then rubbed to a smooth surface. The layer of marble con-

crete should be at least $1\frac{1}{4}$ inches thick after finishing; the final finish should be a No. 80 grit; soap must not be used in cleansing. The concrete should be made mainly of the larger size of crushed marble (that which will just pass a $\frac{3}{4}$ -inch or 1-inch screen) with

enough of the smallest size to act as coarse sand. This should be mixed with neat cement.

Terrazzo floors, to avoid contraction cracks, should be divided into units of reasonable dimensions with marble border, and these units should be laid separately.



The highest work of masonry in the world, Washington Monument in Washington, D.C., is 555 feet and was begun in 1848, from plans of Robert Mills. The first 150 feet of facing is a large-grain marble from Texas, Md. The balance of the exterior walls to the apex is of White Beaver Dam marble from Maryland.

LIST OF QUARRIES AND MARBLE MANUFACTURERS

REPRESENTED IN THE MEMBERSHIP OF THE
NATIONAL ASSOCIATION OF MARBLE DEALERS

<i>City and State</i>	<i>Company</i>	<i>Representative</i>
Akron, Ohio	Flower Marble and Tile Company	Jas. T. Flower
Atlanta, Ga.	Reeves Marble Company	Alex. Reeves
Baltimore, Md.	Hilgartner Marble Company	A. H. Hilgartner
Baltimore, Md.	Jos. B. Dunn & Sons, Inc.	Chas. Scheidt
Baltimore, Md.	P. B. and W. Marble and Tile Co., Inc.	Richard T. Salter
Birmingham, Ala.	Alabama Marble Company	John S. Sewell
Boston, Mass.	Troy Bros. & Company	M. W. O'Brien
Buffalo, N.Y.	Geo. W. Maltby & Son Company	Wm. C. Maltby
Buffalo, N.Y.	Lautz Marble Corporation	R. K. Glass
Carthage, Mo.	Arnosti Marble Co.	A. Arnosti
Carthage, Mo.	Carthage Marble and White Lime Co.	Geo. S. Beimdiek
Carthage, Mo.	Consolidated Marble and Stone Co.	Millard Bryan
Carthage, Mo.	Ozark Quarries Co.	T. R. Givens
Carthage, Mo.	F. W. Steadley & Company, Inc.	K. D. Steadley
Carthage, Mo.	Lautz Missouri Marble Company	F. J. Lautz
Carthage, Mo.	Spring River Stone Company	John E. O'Keefe
Chicago, Ill.	American Marble Mill Company	T. J. Murphy
Chicago, Ill.	Black & Gold Marble Company	J. J. Bauer
Chicago, Ill.	C. N. Marthens Marble Company	C. N. Marthens
Chicago, Ill.	Corley-Meservey Marble Company	B. F. Meservey
Chicago, Ill.	Davia Bros., Marble Company	Humbert Davia
Chicago, Ill.	Enterprise Marble Company	Thos. A. Knudson
Chicago, Ill.	Flavin Marble Mill	F. A. Flavin
Chicago, Ill.	Frank P. Bauer Marble Company	Frank P. Bauer
Chicago, Ill.	Henry Marble Company	H. K. Townsend
Chicago, Ill.	Jas. B. Clow & Sons Company	Jos. Little, Jr.
Chicago, Ill.	M. Keating & Sons Company	Thos. F. Keating
Chicago, Ill.	Naughton Marble Company	Thos. Naughton
Chicago, Ill.	Peerling Marble Company	Frank J. Peerling
Chicago, Ill.	Standard Mosaic Tile Company	C. R. Borchardt
Chicago, Ill.	Taylor Marble Company	Geo. W. Bower
Cicero, Ill.	National Mosaic Tile Company	George Wilde
Cincinnati, Ohio	Cincinnati Marble Company	H. L. Pike
Cleveland, Ohio	Allen Marble Company	R. M. Allen
Cleveland, Ohio	Empire Marble Company	Frank C. Smith
Cleveland, Ohio	Haworth Marble Company	W. J. Haworth
Cleveland, Ohio	Interior Marble and Stone Co.	E. M. Fritz
Cleveland, Ohio	Prospect Mantel and Tile Company	S. J. Weingarten
Cleveland, Ohio	Roy-Cliff Marble Company	L. G. Yeau
Columbus, Ohio	Wege Marble and Tile Company	C. F. Wege
Dallas, Texas	J. Desco & Son	J. C. Bruggen
Dallas, Texas	Southwest Marble Company	J. Desco
Dallas, Texas	McElhinney Tile and Marble Co.	William Jessop
Denver, Col.	Denver Mantel and Tile Company	D. C. McElhinney
Denver, Col.	Des Moines Marble and Mantel Co.	W. D. Watson
Des Moines, Iowa	Holbrook Marble and Tile Company	J. R. Golden
Des Moines, Iowa	Christa-Batchelder Marble Co.	H. F. McAdow
Detroit, Mich.	Detroit Marble Company	E. L. Leavenworth
Detroit, Mich.		B. L. Cummins

THROUGH THE AGES

<i>City and State</i>	<i>Company</i>	<i>Representative</i>
East Cambridge, Mass.	Johnson Marble Company	T. J. Johnson
Fort Worth, Texas	Good Marble Company	H. G. Good
Houston, Texas	Salt Lake Marble and Supply Co.	Geo. E. Rieder
Indianapolis, Ind.	F. E. Gates Marble and Tile Co.	F. E. Gates
Kansas City, Mo.	Kansas City Marble and Tile Co.	G. F. Keller
Kansas City, Mo.	Phenix Marble Company	Mastin Simpson
Kansas City, Mo.	Sutermeister Stone Company	C. O. Sutermeister
Kasota, Minn.	Babcock & Willcox	Tyrell S. Willcox
Kasota, Minn.	Breen Stone and Marble Co.	Tyrell S. Willcox
Knoxville, Tenn.	Candoro Marble Company	T. O. Couch
Knoxville, Tenn.	Gray Eagle Marble Company	E. F. Klein
Knoxville, Tenn.	Gray Knox Marble Company	J. B. Jones
Knoxville, Tenn.	John J. Craig Company	John J. Craig
Knoxville, Tenn.	Knoxville Marble Co.	John M. Ross
Knoxville, Tenn.	Ross & Republic Marble Co.	W. E. Moses
Knoxville, Tenn.	Salomone-O'Brien Marble Company	Walter O'Brien
Knoxville, Tenn.	Tennessee Producers Marble Co.	B. L. Pease
Little Rock, Ark.	Southwestern Tile Company	R. E. Overman
Long Island City, N.Y.	Clarendon Marble Company	Alexander Thomson
Louisville, Ky.	Peter & Burghard Stone Co.	Jos. E. Burghard
Memphis, Tenn.	Central Mosaic and Tile Co.	Louis B. Marus
Milwaukee, Wis.	Andres Stone and Marble Company	Edgar Andres
Milwaukee, Wis.	Breidster Marble Company	Fred. W. Breidster
Milwaukee, Wis.	McClymont Marble Company	J. J. McClymont
Minneapolis, Minn.	Twin City Tile and Marble Co.	F. O. Streed
Minneapolis, Minn.	Northwestern Marble and Tile Co.	Chas. N. Gramling
New Orleans, La.	Albert Weiblen Marble and Granite Co.	Albert Weiblen
Oklahoma City, Okla.	Taylor Marble and Tile Company	G. W. Taylor
Omaha, Neb.	Sunderland Bros., Company	J. P. Williams
Peoria, Ill.	Peoria Stone and Marble Works	H. A. Farley
Pittsburgh, Pa.	American Marble Company	Max Weiner
Pittsburgh, Pa.	Iron City Marble Company	George L. Sibel
Pittsburgh, Pa.	Pennsylvania Marble and Mosaic Co.	John A. Fiore
Somerville, Mass.	Phil. H. Butler & Son Company	P. H. Butler
St. Louis, Mo.	Bradbury Marble Company	I. P. Morton
St. Louis, Mo.	Pickel Marble and Granite Co.	H. A. Feldman
St. Louis, Mo.	St. Louis Marble and Tile Co.	R. C. McDonald
St. Louis, Mo.	Shaw Marble and Tile Company	A. Coerver
St. Louis, Mo.	Union Marble and Tile Company	W. C. Fox
St. Louis, Mo.	Weis & Jennett Marble Company	Joseph Weis
St. Paul, Minn.	Drake Marble and Tile Company	W. E. Andrews
Tate, Ga.	Georgia Marble Company	Sam Tate
Wichita, Kan.	Hawkins Interior Marble Company	M. K. Hawkins
Wilmington, Del.	Geo. W. McCaulley & Sons, Inc.	C. W. McCaulley
Winchester, Mass.	Puffer Mfg. Company	A. W. Puffer

CO-OPERATING—

Vermont Marble Company, Proctor, Vermont.



NATIONAL CITY BANK
42d St. & Madison Ave.
NEW YORK CITY



McKIM, MEADE & WHITE, Architects
GEO. A. FULLER CO., Gen'l Contractors
McLAURY MARBLE CORP., Interior
Marble Work



The marbles used were
Botticino, Travertine and
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