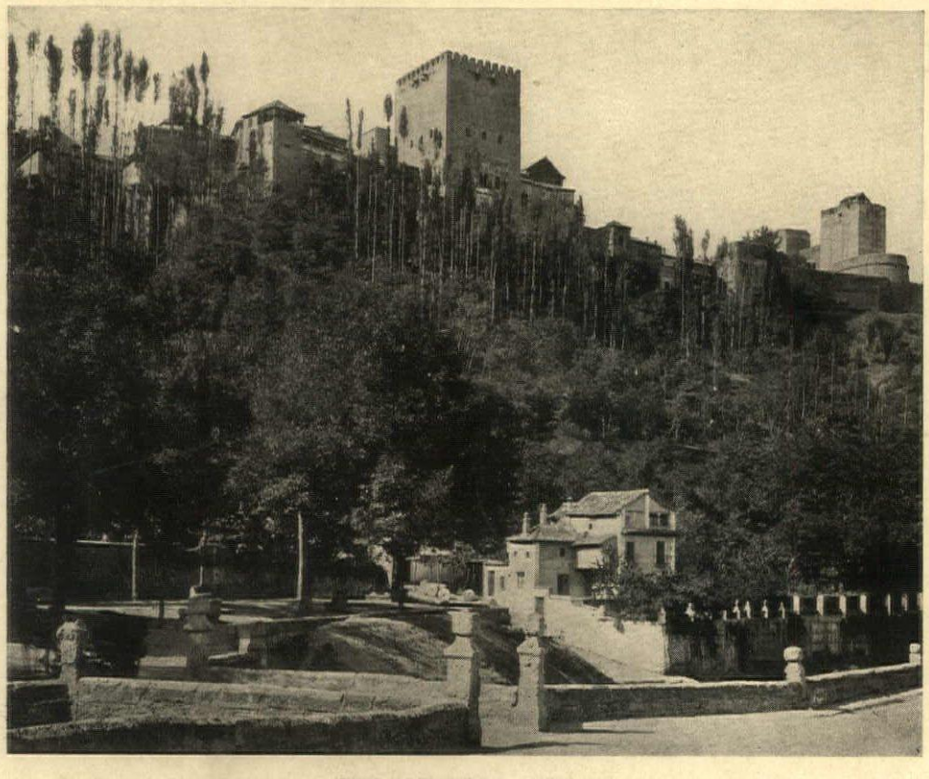
The AMERICAN ARCHITECT



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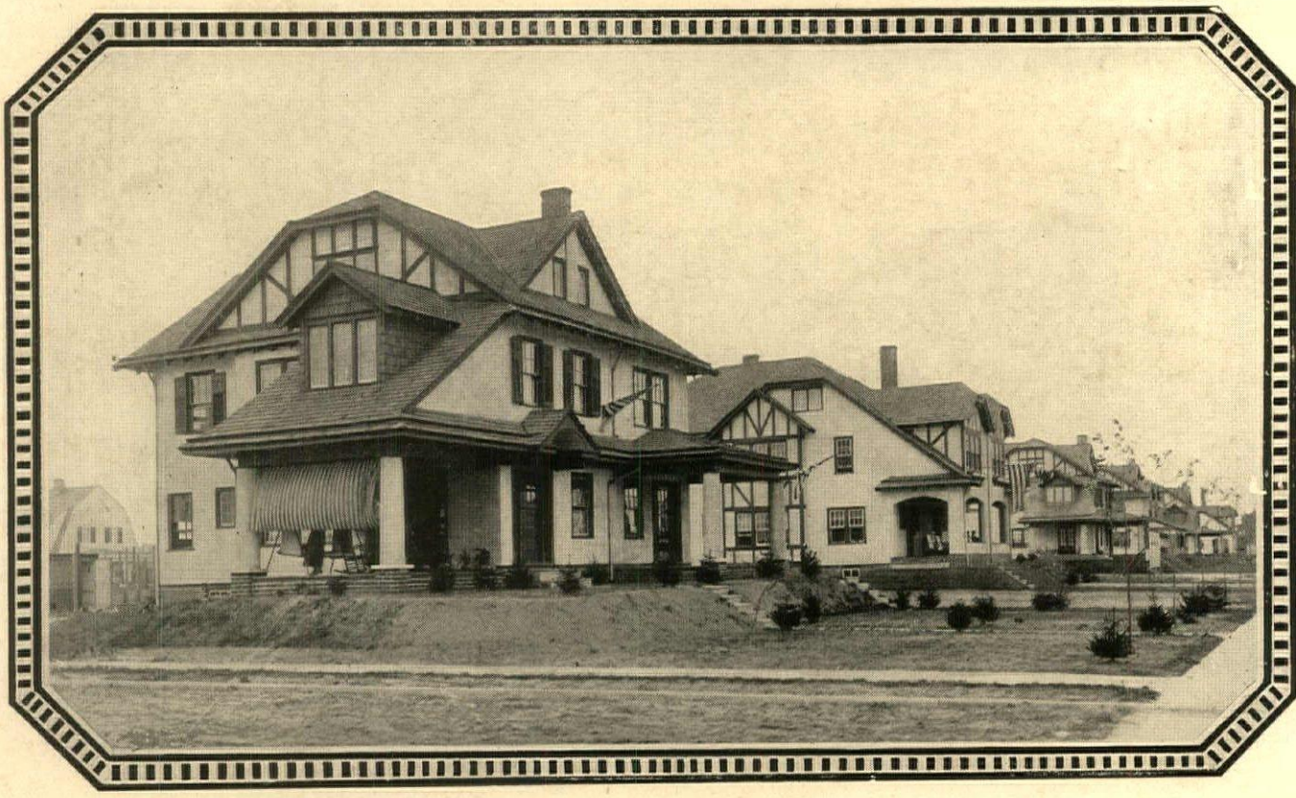

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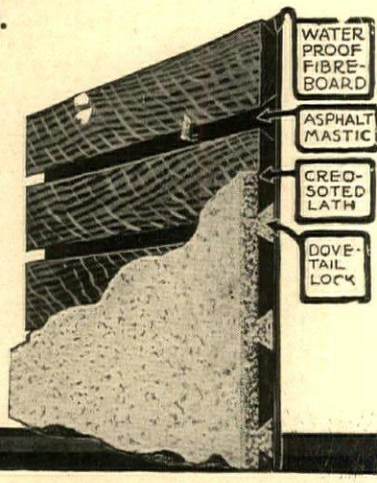
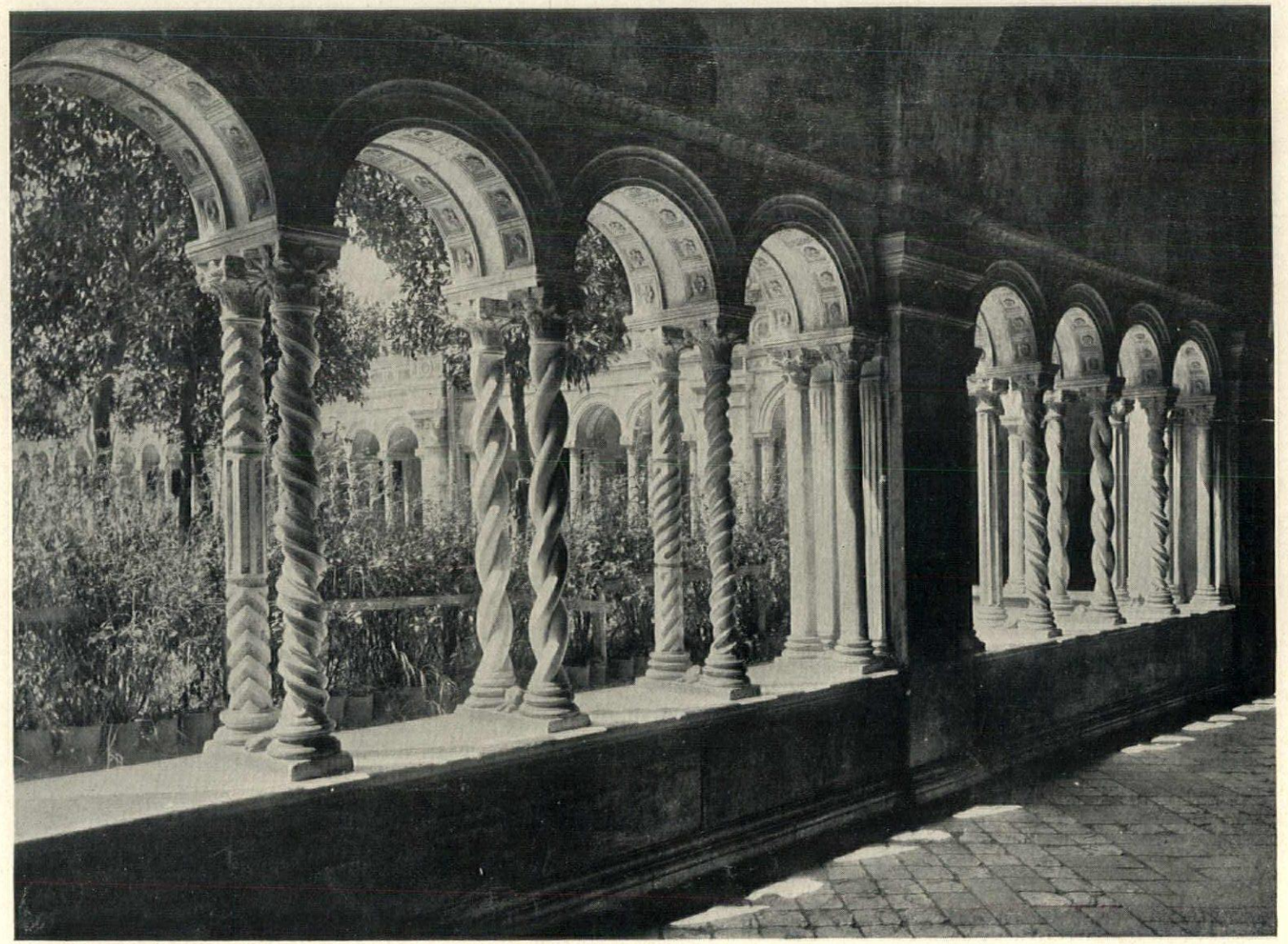




THE BASILICA OF ST. PAOLA, ROME, ITALY

THE AMERICAN ARCHITECT

OL. CXIV WEDNESDAY, SEPTEMBER 11, 1918 NUMBER 2229

The Romance of Roofing Slate

Part I

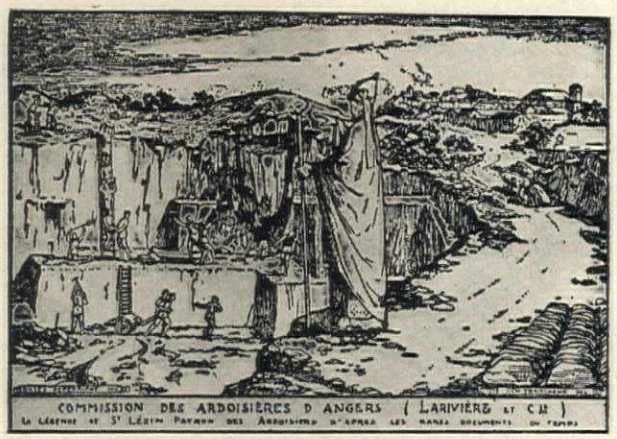
By HOWARD BLAINE BURTON, B. ARCH.

T was in France, up in the upper left-hand corner, where slate first began to serve man. On the banks of the Mayenne River, which approately gets its inspiration in the land of apple ssoms and bells, and flows in a southerly direcn through the ancient provinces of Maine and jou, now the departments of Mayenne and ine-et-Loire, abode the discoverer, inventor, rrier and promotor of roofing slate.

Ie carried neither samples nor photographs, nor re hand - picked cimen roofs dis- ed at his headarters, although it the most promit place the country und; for he was e other than the out and very industus St. Lezin, Bishop Angers.

The time was very y, in fact this one he parts three, into ch "All Gaul was ded" had got of the Romans less n one hundred years ier in the success- uprising of the Franks under Clovis. This an chief then in 496 A. D. embraced Christianity thus got things ready for St. Lezin, or, as he known to the Romans, St. Licinus.

t. Lezin was not too busy with his ecclesiastical es to notice the bluish colored rock which proed through the soil from Angers, north as far Trelaze. He noted further that while it split ost unaided into thin slices, there was no further ntegration. Subsequently forced to seek protec- from the elements he upturned in a hurry a great slab of the stone and was sheltered by the first slate roof of record. And according to the legend there came a vision in which he was shown how to mine, work and use the newly found material, and forthwith he started his people at the new industry. He persuaded them that the new stone was lighter than thatch and would not burn; that they would not have to replace it through the wear of time; that it was easy to apply and very much better than anything else they could use. And it is to be further noted in passing that while St. Lezin lived in the sixth century, his arguments for slate roofing have to this day neither been improved upon nor changed one iota.



THE MIRACLE OF ST. LEZIN, THE PATRON SAINT OF SLATE

(From an old print)

Continuing the legend, it is related that things did not for a time go any too well. The thatchers objected to the innovation and started adverse propaganda helped by a series of accidents which they declared manifested divine displeasure. Things were going badly for the Bishop until one day while standing near the quarry a great mass of rock became dislodged and was about to fall directly on the workers beneath. Some men, glad of an excuse to get out of the pit, and warned by the preliminary roar, were seeking safety denied their hapless companions, when St. Lezin arose, the legend says, raised his arms and spoke, "Rest, my friends; God is with us and no harm can come to us." At the same time he made the sign of the Cross and the

falling block, it is claimed, rested miraculously in mid air.

Although the slate from the Ardennes region over near Belgium has surpassed the Angers slate in economic importance, the latter quarries, now worked more than four hundred years by the one firm of Messrs Lariviere et Cie., and still one of the best of European slates, were for man, the birthplace of slate. It is amusing to consider beyond the ecclesiastical introduction of slate to man how in infancy his sterilized milk formula is mixed on the slate laboratory table; as a schoolboy he learns from a slate blackboard, and again as a man in industry his chemicals are contained in slate vats, his clothes are washed in slate tubs, his food preserved from taint on slate refrigerator shelves. His sanitary plumbing abounds in slate floors, slabs and wainscots and he lunches from a marbleized slate table top in the enamelled restaurant. When the day is done he may walk up his garden path of slate and later, after a game of pool on the slate billiard table top (the only material known that will stay flat), turn on the electric light, the current for which reaches him through a slate switchboard. Then with slippers off he may recline in front of his slate mantel facing and watch the smoke ascend through the slate chimney cap.

Nor is this all. When it is all over, if a pau his remains will lie on the slate slab of the mor or if a prince his dust will repose in the slate-li sarcophagus, and while in the one case the cou will plant a slate marker in the Potter's field, in other a slate memorial to his fame may be erec in the Town Hall.

Thus from the cradle to the grave, in busi and pleasure, in useful and non-essential indus in the acquiring and losing of fortune, body soul, from dust to dust, slate is linked with n

A bit of England in New Jersey. The building and the slate roof happy and inseparable.
HOLMHILL LODGE, ROSELAND, N. J.
MICHAEL STILLMAN, *ARCHITECT*

For all these uses of slate one must thank Mother Nature doubly, for it was her first atte to specialize. The story has many remarkable pects to those with perseverance to wade thro the mass of geological impedimenta and sal some information therefrom. Briefly the Arc Era had just closed; the earth was with form was still void. The work of slate rock making place in the Cambrian and Lower Silurian per and from the marks made by Annelids drag their tails through the mud of the shallow oc and other fossil forms, the time is set at 100,000 years B. C. Of course, there were trilobites ostracodes, brachiopoda, sponges and others, wearing shells was not at all common, otherwise mountains of Vermont and Pennsylvania would

ır to-day like the white chalk cliffs of Dover. It st be remembered that even a small amount of cium carbonate will render slate unfitted for exure and therefore useless for roofing.

Even with lime almost excluded, slate is a highly nplex substance, for the rivers of the Cambrian iod brought down whatever there was to come, l although maleficial substances get in, the subuent process of metamorphosis subdued them o inertness by rearranging their atoms in entirely v mineral combinations — the iron oxide into rmless iron sulphate to give color to the red and rple slates; chlorite, for the green slates whether fading or weathering; inert carbonaceous matter m the dead sea organisms for the black slates. reover, the metamorphic process completely ered the granular character common to nearly all rock by compressing the crystals into flat scales and "rutile needles" so overlapped and interwoven as to create a veritable mineral fabric or felt while the accompanying heat continued exactly to the point where these scales—to borrow a ceramic term—vitrified with each other and the silica matrix, producing a substance whose absorption test for the frost to split is negative, or, to be exact, from .09 to .42 of 1 per cent.

The crystalline of the structure of slate is so pronounced that ordinary roofing specimens balanced as the hand ring like metal when struck a sharp blow. Even the formless quarry waste when dropped on the dumps from a height makes a sound like the crashing of glassware.

Perhaps this is the place to answer that perennial inquiry, "Why do we have to get our slate from so few localities when it is so widely distributed?"

The answer is that it isn't.

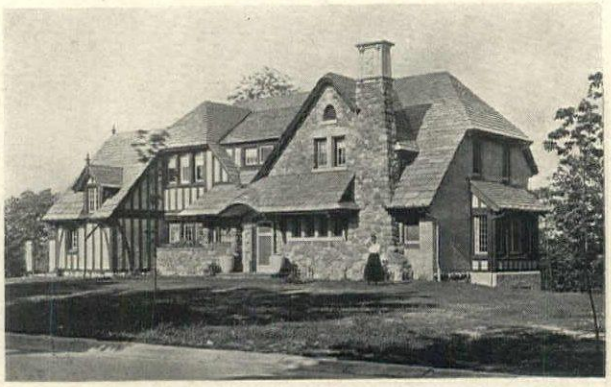
It is shale, not true slate, which is so widely distributed. It looks very much like slate, splits up in layers and it is universally called slate, but it is not slate. First, because it usually has ingredients wrong for this use but yet of economic value, such as iron sulphide, useful in the manufacture of aluminum; lime carbonate for brick; bitumen for crude oil; iron oxide in excess for cheap paint; if calcareous, for Portland cement, not to mention the large percentage of carbon often found in the so-called coal delivered for fuel.

Second, even though possessed of the right ancestry, shale has never had a post-graduate course in metamorphosis. The cleavage of shale looks good, but is bad and is due to incipient disintegration, and when found near the surface shale can be broken up with the fingers. Slate, too, once had a similar stratification but the pressure obliterated it and caused an entirely new set of cleavages usually at an angle to the original

From England as to inspiration but from Vermont as to material.
JOHN RUSSELL POPE, *ARCHITECT*

bedding. Sometimes the bedding became much folded, even overturned, yet the cleavage plans of the flat surfaces of the finished roofing slate pass straight through anticline, synicline and various original beddings which in the black slates occasions the ribbons and in the colored slates the mottlings.

In contrast with the natural product, how puny



Personal architecture will stand the unconventional use of slate.

man's efforts to make a roofing material seem! The pressure formed by the weight of perhaps miles of rock and millions of tons; the pressure generated heat to semi-liquifaction which made not glass but a self-reinforced fabric, even the tension members of which are non-absorptive; the factory, not of an acre or two, but an entire continent in cataclysmal upheaval; not a few weeks of drying or baking and then delivery, but many hundred thousand centuries in the making and nearly as many more in the uncovering ready for man.

But as the process of making slate was delicate it was successful in but few places. Carried too far it becomes schist as are the hills of Vermont adjoining the slate regions. Not far enough, it remains just one kind of shale as in Pennsylvania. Even in the slate belt itself, of two quarries within a few rods of each other, one may have been profitably operating for half a century while the other gives not even a successful prospect. Again, owing to the treacherous structure of the schistose, shale, quartizites, grits, limestone and other veins paralleling the slate, a slide may occur at any time burying the paying beds of slate in hopeless obliteration. The vein of slate may also become uncommercial after a single blast and the quarry worthless. Indeed the woods of Vermont are full of open quarry holes like wounds, now filled up with water, literally graves of somebody's fortune and tears for his lost hopes.

Before going further it might be well to explain just what commercial roofing slate is. It is merely flat slices of rock having almost unbelievable qu ties of splitting, of tough elasticity and which trimmed into rectangles, punched with two h and nailed to the boarding of sloping roofs in r each row lapping the second one below by t inches.

Unlike the majority of building materials, "c mercial slate" offers the advantage of being as in cost as anything possessing the same durabi The life of slate is not known. In Hartford Avon stands the old Saxon Chapel covered in eighth century with a slate roof. It stands to protected by the same slate, moss covered but g For twelve centuries it has stood without c plaint as to the past or misgivings as to the fut It is the same process of nature—metamorphos that creates the slate of to-day and gives equa greater durability, and this durability is inhe in all slate of whatever color or cost.

Ingenuity, capital and favor of Nature give in America greater variety than had our anc precursers. We do not have to wait centuries color to develop. Blacks we have from the s shiny beds of Maine (but of uncanny toughn to the warm sandy grays of Vermont. Reds, that grow brighter on exposure and substitute for shingle tile when the more expensive gra cannot be afforded. There is the little known M roon and the "Rustics" or grays with spots w weather beautifully but which are too white

Thin slate, properly handled, can be as successfully as here.

CORTLAND F. LUCE, *ARCHITECT*

most purposes and appear more interesting in sample than assembled on the roof. Purples t are, some cold, unfading and unsociable; oth warm, intimate and happy. Greens, too, some most too gray and white for most architectural but others of a green even down to the deep Ve Antique which appears green even against a ba ground of verdure. Combining both the green the purple is the great group of mottled co

anging from greens whose purple is apparent only hen wet to deep purples with odd-shaped blotches f green or indefinite clouds of the same.

The weathering slates are a class entirely by iemselves. For three-quarters of a century they ere effectively concealed behind the nauseous ord "fading." They comprise a large group of reens, grays, purples and mixed colors which in a ew weeks or months acquire a century old appear-

A COW BARN

Only the trained artist can superintend into actuality such a rendering as this untouched Kodak picture discloses.

CORTLAND F. LUCE, *ARCHITECT*

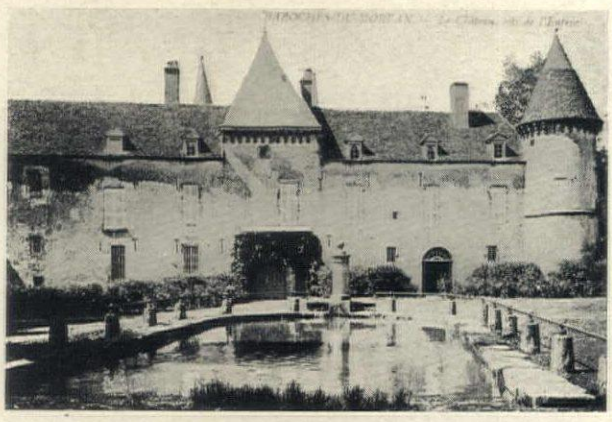
nce without the least sacrifice of lasting quality. lo slate is more fascinating to work with, nor more atisfying in successful result and none more affling in one's early efforts. The color change is lways warm and ranges from a faint transparent iolet over the weathering purple to veritable cal- omine dipping for certain greens and grays. Others are almost too beautiful to use except for ccent or sunshine.

One in particular has a double color effect. Ten thousand centuries ago nature painted the faces of its cleavage planes with pigments of rarest hues defying yet the government chemists to analyze or duplicate. Nature did more, antedating photography by a million years, she impregnated the stone itself with complex substances quite invisible, yet when exposed to the sun and developed in the rain and dew, print out in designs intricate as the frost but in colors of cadmium and madder.

By nature's benevolence the color change of this and all other weathering slates is utterly harmless to the structure of the slate and is on the barest surface. Once formed, only concentrated chemicals or physical abrasion can alter or remove it. A satisfactory chemical explanation has not yet been made and may never be for the color is of crystalline nature similar to the red emerald or the yellow ruby. It is not iron oxide or any definite compound.

The quarry nomenclature has been purposely omitted, first for being out of place, second for being too often meaningless, strained and misleading.

The latter is a result of nearly a century isolation in the form of small operations independently carried on, content to sell for local use, with little or no advertising and with but a single end, that of producing the material in the easiest way. This in time confined slate operations to the easiest working rock which became known as "No. 1," and which instead of being textureful and interesting is more nearly the opposite like an asbestos shingle and thus began a whole vocabulary of terms having meanings totally unrelated to their use in architecture or even buildings. It is no small tribute to slate to have survived and to bear to-day its present relation to architecture.



The feeling of the old French roof is effective for semi-formal architecture and can be reproduced in modern slate.

THE CHATEAU AT BOZOCHES.

Fashion in Building Stone

The physical appearance of New York City, says Arlando Marine, in *Record and Guide*, has changed in many ways in the last fifty years, but in no other respect more than in the outward aspect of its principal buildings, due not only to the great changes that have taken place in the architecture, but also in great measure to a change in the character of the materials and in the style of the façades, the show walls, of the city's big business blocks, apartment houses, churches and other monumental buildings and its better-class private houses.

In the early days of New York the buildings were sombre in color and plain in architectural lines. Brown stone and red brick predominated along the streets and the severeness and lack of originality in the elevations of buildings, and a depressing sameness in their general appearance, made the city singularly unattractive. But this ugly, low-toned and monotonous three, four and five-story city has given place to one that is bright and cheerful, whose buildings are full of color and variety and reflect the best ideas of the greatest architects of all times.

The advent of the "skyscraper" has had much to do with changing the appearance of the city. Built of light-colored materials, they have risen above the mass of low-lying and dingy blocks and dominated the whole color scheme, changing the skyline from its former stratified character to a more picturesque, sometimes slightly grotesque but always interesting and compelling irregularity. Early American architecture in cities was generally of a strictly utilitarian type. There was too much Queen Anne in the country and too little Stanford White in the city in the early days in New York.

Fashions in building stone as in other things may be said to move in cycles. These periods have succeeded each other, roughly speaking, at intervals of ten or fifteen years, and during the time under discussion nearly the whole range of available building stone has been covered until at the present time there is a return to the use of certain kinds of stone which were largely used a number of years ago, but which in successive periods were displaced in the esteem of architects as they turned to the use of some other kinds of building material.

The periods in which various building stones have held their own against other varieties have been established by chance more than by any concerted action of architects. The old favorite has been displaced and a new one set up when some leading architect has successfully used a particular stone with telling effect. Then would come a time when all were tired of it and almost simultaneously turned to some other variety.

It is interesting to remember that in the who wide expanse of the country east of the Rock Mountain there are comparatively few deposits workable building stone. Ohio, Indiana and Ke tucky produce probably 95 per cent of the free sto used in buildings throughout the entire countr The New England States are the granite field while as to marbles Vermont, New York State a Georgia produce the white building and monument stock and Knoxville, Tenn., the colored stock, t light pinks and grays. Since the war the foreig supply represented by the French limestones a the Roman Travertine has been entirely cut off.

The result is that architects have been turning the domestic fields and are finding the native ston very satisfactory. For one thing the local stone adapted to the climate. One of the curious thin about stone is the well-known fact that a stone c be used successfully east or west along the latitu in which it is quarried, but if laid in a colder clima is apt to disintegrate rapidly. Not all buildi stone quarried in a temperate zone can be used su cessfully in a more rigorous climate than in the o in which they are produced. Another interesti fact is that Vermont marble and Indiana limesto are practically of the same composition, each co taining about 98 per cent of carbonate of lime. T Vermont marble can be polished while the India limestone cannot. The Vermont marble was cry tallized by heat and pressure in the process of fo mation, giving it texture which makes it susceptib to polish. This is not true of the limestone.

Previous to 1886 Connecticut brown and Oh gray sandstones were largely used, but prior to tha dating back to 1850, considerable white marble w in use. In the period from 1886 to 1900 a ve noticeable change came about in the style and colo of stone, and this period is particularly marked wi the use of red sandstone from Lake Superior, Lon meadow and Maynard, Mass., as also from Scotla and England. Of the Scotch stones, the Murra Hill Hotel is a notable example, while the Waldor Astoria is built of the Lake Superior and Mayna stones. There were also used olive-colored san stones from Nova Scotia. At the close of th period the limestone from the Bedford and oth Indiana districts began coming in and it was mark also by the return to the use of white marbles.

The most notable examples of the use of marble toward the end of this period, were in the buildi of the Public Library, in which Carrere & Hastin made use of Vermont marble; the Stock Exchang in which Geo. B. Post & Sons used Georgia marbl and the Tiffany Building, for which the choice the architects, McKim, Mead & White, fell upo South Dover, N. Y., marble. It is an interestin

fact that the South Dover marble comes from the quarry nearest to New York City.

In the period of 1900 to 1915 the taste of the architect and the public as directed by the leaders of the profession tended to the more widespread use of tinted marbles rather than to the white examples which have just been mentioned. The desire for color, for relief from the lack of warmth in white marbles, was met in the fine Knoxville, Tenn., varieties, which run to delicate pinks and grays, with peculiarly interesting veinings. Some of the prominent buildings erected from these marbles are the Morgan Library, of which McKim, Mead & White were architects; the Morgan Bank Building, Trowbridge & Livingston, architects; the New Haven Post Office, James Gamble Rogers, architect; the Morton F. Plant residence, Guy Lowell, architect, etc.

Also during this period (1900 to 1915) French limestone and Roman Travertine stones began to be used for special buildings. In the former a notable example is the Altman Stores, Fifth Avenue and Thirty-fourth Street, Trowbridge & Livingston, architects. Of the Roman Travertine stones, the Duveen Bros. Building, Fifth Avenue at Fifty-sixth Street, Horace Trombaur, architect, is a notable example. Roman Travertine was also used for the interior work of the Pennsylvania Station.

The distinguishing feature of the French limestone as compared with domestic limestone is its beautiful warm, yellow tone.

The distinguishing characteristic of the Roman Travertine stone is the warm, yellowish tone and the irregular perforations in the stone. This stone is evidently of a lava formation and is found in the vicinity of Mt. Vesuvius.

In designing the Kane residence, at Forty-ninth Street and Fifth Avenue, attempts were made to get a domestic stone that would approximate the appearance of the Roman Travertine. This stone was discovered in some of the Indiana quarries, the bottom cuts of which had never been thought of any value. Stanford White, who saw samples of these domestic Travertines, specified that they should be used in the Kane residence, and he also used the same stone in the Second National Bank Building, Twenty-eighth Street and Fifth Avenue.

But the dominant material of this period as a whole was Bedford or Indiana limestone.

During the past five years architects have been searching for other stones. During this period there has grown a great change of sentiment in favor of variegated colors and variety of textures. The Ohio sandstones are produced in large quantities and are easily fabricated and are rapidly growing in favor. They have also the precedent of weathering satisfactorily in this market, having been used here for probably sixty years.

This climate is very trying on all building stones because of the action of the salt atmosphere. The obelisk in Central Park, a product of Egypt and far from its home, is an example of stone deteriorating when taken out of its native environment. It has undergone treatment regularly ever since it was erected in Central Park to preserve it and to prevent its crumbling.

In the selection of stones architects have to take into consideration climatic conditions and in that they are sometimes hard put to find just the stone that will meet the texture and color and at the same time afford the necessary staying qualities.

Proper Recognition for Architectural Practice*

Visions of lack of appreciation of architecture by the public appear to haunt the minds of most architects of the present day.

Engineers by their energy and success, in gaining the public ear, are fast driving the modest, timid architects out of business. To offset this tendency we notice that many architects, in order to keep up with the procession, have added the title of engineer to that of architect for the purpose of impressing the public with their superior qualifications over and above that of the properly trained architects who make no claim to other professions. Architecture and engineering are two separate and distinct professions, and it is given to but few men to master the intricate details of both, so that in most cases the assumption of the dual title is used for the sole purpose of gaining advantage over those who do not have the temerity to adopt such with little or no preparation.

The Massachusetts Institute of Technology makes the distinction between architecture and engineering and has separate courses for the training of students in each, as either is all that the man of average intellect can properly master with credit to himself. So that the mere adoption of a title without the necessary training properly to sustain it should at least be discouraged by all self-respecting architects.

However, we must cease worrying over our troubles and assert ourselves with energy in order to gain what we desire: a better and more extended appreciation of our profession as architects.

Some professions, such as the law, are held in less esteem than that of architecture, and if we would increase respect for our profession we must

*Extracts from an address by George Hancock, President North Dakota Architects' Association.

command it through our work and that will bring us the public recognition we so urgently need.

It is useless for us to look to the law courts for protection, as the lawyer is the only winner where such efforts are made, but as a reason for hope in the improvement of our chosen calling, we have only to look at the host of poorly paid teachers and clergy to learn that our lot is no harder than theirs, in the matter of lack of appreciation of the service they render to the public. It is well to think of others when disposed to complain of our lot.

If we would succeed better than they we must do better and nobler work, with our minds set more on achievement than on temporary financial success.

It is futile to complain that this is a commercial age, with but little public appreciation of art; such whining does no good and only indicates weakness. There is just as much artistic taste and feeling in the world to-day as in the days of Titian and Michael Angelo, and it is for us to satisfy this artistic taste and feeling if we would succeed in gaining for our profession the respect and recognition to which we believe the nobility of architecture is entitled.

During the past ten centuries architecture has come through many changes and developments. The eighth and ninth centuries gave us the unique creations of the Saxons; the tenth and eleventh centuries the solid honest Norman work that has so well stood the test of time, as evidenced at Winchester and Durham.

The twelfth and thirteenth centuries gave us the pure and graceful early French and English Gothic that so clearly expresses the aspirations of the people of those nations in the magnificent creations of Rheims and Amiens, Salisbury and Westminster, the like of which has never been seen before or since that age.

The fourteenth and fifteenth centuries gave us the geometrical and perpendicular styles, often referred to as the climax and full development of Gothic architecture in Europe.

Such art and architecture as the people of those times produced should serve as a stimulant to greater efforts of the younger architects of our time. They had no examples to guide them and their work was the result of creative and imaginative concentration and skillful independent effort.

Shall we then, with all these beautiful examples before us and the numerous examples of the Renaissance of the sixteenth century, and the more recent productions of Jones and Wren and the revival of the Romanesque by Richardson and Hunt in this country, fail for the lack of making an effort to merit the recognition we so earnestly crave? No, we must attempt much even if we accomplish little, but as effort is the parent of results, we can expect no recognition by the public unless we command its attention.

By education and experience the architect of to-day should be better qualified to handle successfully building operations of all kinds than men not having such qualifications, but the public cannot appreciate this for the reason that the architects have not done their part in the instruction of the public to the point of appreciation of their service to their clients and to the public in general.

So far, along this line, our efforts have been limited to talking to ourselves through the medium of professional and trade journals, that seldom or never reach the eye of the general public, or prospective client.

Undue modesty on the part of the trained architect is doubtless the cause of this shyness and should be overcome by a much needed change in the method of bringing the client and architect together, on a better and fuller understanding of their relationship to each other, and to protect the public from the trickery of the fakir and charlatan who is ever ready to pluck the fruits of honest effort along all professional lines. The men who have fitted themselves by great expenditure of money and time to serve the public in an honest and skillful manner must have some protection as against quacks who have no training in architecture and who do their work by proxy and only see the commission or money side of the profession.

The licensing of all architects is a reasonable solution of the problem that confronts the profession at this time, if we would be prepared to enjoy the goodly heritage which is the promise of the near future in architecture in this country.

As a final word to young men now entering upon their chosen profession I would say: Above all things, be prepared to meet and skillfully handle the problems with which you may be intrusted. And this can only be accomplished by constant study and earnest effort.

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Woman's Work in War Times

THE extent to which the increasing employment of women in occupations heretofore filled by men may add new elements of danger against which mechanical provision should be made finds an application within architectural jurisdiction in the action of a coroner's jury in Chicago.

Following an inquest on the death of a man who was killed trying to board a hotel elevator after it had started, the jury has recommended to the city council, through the coroner, that an ordinance be passed compelling the installation of safety devices making it impossible to start the cars until the shaft doors are closed. This is understood to be compulsory in New York, but in Chicago it is optional, and is stated to be in effect in only 5 per cent of the buildings in which passenger elevators are used.

The elevator in which this accident occurred was operated by a girl, and the employment of elevator girls in place of men or boys was made the basis of the recommendation. At the same time attention was called to the fact that there have been nineteen elevator fatalities in Chicago since the beginning of the year, and forty-eight in 1917. The employment of girls is still too limited to account for any considerable proportion of these accidents, and the desirability of safe-guarding elevator operation in every way possible would seem to be a larger question than its relation to the sex of the operator.

While women may lack experience and familiarity with mechanical work, as compared with men, it seems extremely doubtful that their intelligence can prove inferior to that exhibited by many elevator men, or that they can have less apparent concern for the safety of passengers. Starting the elevator before the doors are closed is rather a common practice among the elevator men than an exception.

"Forget How Things Were Done Before We Entered Into This War"

NO matter how hard it may be to teach an old dog new tricks, every man in this country, despite his age or the length of time he has been engaged in specific work, will need to learn to speed up his effort and often entirely change his methods if he is to keep pace with the feverish haste of these war times. Many, in their efforts to keep up the pace, will fall by the way, but many more will develop efficiency and capability of speed to an extent never before thought possible.

Numerous methods of the slow but sure sort, previously used and long tried, will have to be cast aside. As we run swiftly toward the goal of our endeavor, we shall read the necessity of adapting ourselves to the quickly moving current of these abnormal times.

In some of the Government departments in Washington are placards reading, "Forget how things were done before we entered into this war." To do this one must find the quickest way, the best method, and must realize how many are the changes in every field of endeavor calling for our readjustment. At no other time in the history of this country has the human mind been so taxed to the limit of its resourcefulness.

Limitations of age for service must now be removed. We retire our army and navy officers at the ages of 63 and 64, respectively, but we are now learning that men of these years with so long a period of service to their credit are among the most resourceful and the most willing to work under the new order of things.

The Government needs the benefit of every matured, experienced mind it can command. When the suggestion was made to forget how things were done before we entered into this war, it was doubtless because it was being learned that while a large resourcefulness was active among the younger men, their new methods often did not stand the test

of actual application so well as those employed by men of older and riper experience.

The great necessity for speed in every operation and the conditions hampering transportation and labor have compelled substitutes of materials to an extent never before experienced. Here, if in any branch of special Government service it not only becomes necessary, it is imperative to "forget how things were done before we entered into this war."

The usual routine of construction work, based on the standardization of materials and methods must be interrupted, and in order to gain the end desired, preconceived methods must be cast aside and every new suggestion that will bring quick and certain gain must be brought into action.

Just what great good this new order of things will accomplish can be ascertained only from the column which we will add up at the end of the war, of the certain, if few, gains which have accrued.

Memorial Oaks

THE memorial oaks that many cities will erect in memory of their fallen sons does not present a new idea in the commemoration of soldiers who have given up their lives for their country.

The stately avenue at Concord which leads to the site of "the rude bridge that arched the flood" is bordered by a row of trees, each one intended as a memorial to one of Concord's sons who gave up his life, when as a "minute man" he took part in the memorable conflict of mid-April, 1775.

This commemorative idea is one to be strongly commended, and it is hoped that the example of the cities which have already taken up this method of memorial will be followed by many others.

It has been pointed out in these columns that a very dignified opportunity to create memorials was to be found in the town planning schemes now being taken up all over this country. Can anyone imagine a more impressive or lasting memorial than a boulevard, along which are planted bordering lines of oaks or elms, each with a bronze tablet bearing the name of a native son, fallen in the defense of his country.

Would a civil administration dare to treat so beautiful a memorial with neglect, and have the censure not alone of the relatives of the men thus honored, but also of an entire community whose greatest pride will be the part it shall have played in this war and the sacrifices it shall have made in carrying it to a successful conclusion?

Rehabilitating French Agriculture

AMERICA is helping France to rehabilitate her agriculture, according to an interesting article in one of the Paris papers, with a view to economizing in tonnage from this country. France does not produce to-day anywhere near enough for her army and civilian population, to say nothing of the food for the large foreign armies fighting on her territory. For instance, 330,690,000 bushels of wheat annually were necessary for the needs of the French people before the war. At present France produces scarcely more than 146,000,000 bushels. But by restoring to cultivation most of the lands abandoned owing to labor scarcity, and by intensifying agricultural production, France's acres are brought back to normal again.

The American Red Cross, the American Committee for Devastated France, and the Civilian Committee are all co-operating in this task. During 1917 7500 acres were thus reclaimed, the proceeds of an acre being 52 bushels of grain. Thirty mechanical tractors were employed. To replace those so wantonly destroyed by Germany, 7900 trees were planted.

Not only will ocean tonnage be economized by this cultivation of abandoned French fields, but incidentally, comments the writer of the article, the French farmers are getting acquainted with American agricultural methods, a distinct benefit which will endure long after the war is over.

Hotel Expansion in Chicago

Chicago hotel operators are not awaiting the end of the war to provide for building expansion, even if the buildings cannot yet be erected. This is evidenced by two recent announcements.

The Congress Hotel Company has purchased for $300,000 the land for an addition to cost $1,500,000. The architects, Marshall & Fox, have prepared preliminary plans, features of which are a banquet hall hall, with seating capacity of 3500, and a roof garden, which it is said will be the finest in the country. The foundations of the addition will be built to carry twenty-one stories, but as long as the present building ordinance limiting the height of Chicago buildings to 200 ft. is in effect, it cannot be carried above sixteen stories. Construction is to be started immediately at the close of the war, or earlier, if possible.

The Moir Hotel Company, proprietors of the Morrison Hotel, have also secured land to provide for extensive additions to the present building, which contains 1000 rooms. This structure was erected about two years ago, in two sections, so as to permit continuous operation of the old hotel on the original ground, until the building which constitutes half of the present structure, on the new ground, should be ready for occupancy.

The contemplated annex to the Blackstone Hotel would doubtless have been under construction early enough to have been completed without interference from war conditions, if the undertaking had not been delayed by the holding up of a permit for building it to a height conforming to the main building, which is twenty-two stories, and the reluctance of the Drake Hotel Company to forego the plans to that effect. They contended that this, as an addition, should be governed in this respect by the terms of the permit for the main building, instead of being subject to the height-limitation ordinance, which has since gone into effect. It is understood that this obstacle has now been overcome.

This problem, if not settled, would also confront the Morrison Hotel, which was the last tall building in Chicago to be erected under a permit antedating the present ordinance, if its extension plans contemplate equalling the height of the present structure.

Plans for a new hotel on the site of the Stratford have been under consideration for a long time past, various reasons being given from time to time for delay in starting the work. The real reason is believed to be that with its good location at the corner of Jackson and Michigan Boulevards, business is so profitable even in the old building as to cause reluctance at the prospect of an interruption, for conditions there are not favorable for the two-section building plan followed in the construction of the Morrison.

Chicago's need of more hotels is obvious and pressing. Congestion under post-war conditions, as generally anticipated, will be inevitable. Whatever restrictions war conditions place upon present construction of this character, the planning which will enable construction to start immediately on the removal of such restrictions is feasible and wise. Followed in all communities, and with reference to buildings of all the kinds that will be needed, it would do much to obviate the difficulties confronting architects to-day and embarrassing their clients later if they have not prepared in advance.

Our Fuel Problem

The United States Fuel Administration has issued a booklet of 64 pages, under date of August 1, 1918, entitled "Fuel Facts," wherein are set forth many brief and pertinent suggestions concerning the present coal situation. "Our Fuel Problem" is thus described:

The solution of the world's war problem must depend upon the solution of America's fuel problem. Fuel, the driving force of the war, must be available in quantities sufficient to insure victory. Without fuel the vast and intricate machinery of war industry must stop; railroad and steamship traffic will be clogged, and the steady progress of our armies will be halted. All of the great war machinery depends on fuel.

Now, in midsummer of the nation's second war year, it is certain that the nation's enormous demands for fuel cannot be fully met. Although seven hundred thousand miners work to the limit, and the transportation agencies of the country strain every nerve to facilitate distribution, the war demand for fuel will inevitably outstrip the possible output.

Every time a fifteen thousand-ton troopship carries American soldiers to the fighting front in France it consumes about three thousand tons of coal or 12,000 barrels of fuel oil. More than four million tons of coal are consumed in a year in transporting the supplies which must go forth in a continuous stream to maintain a single army. Our present shipbuilding program will demand fourteen million tons of coal merely to manufacture and transport the steel to be used in ship construction; and, in building eight million tons of vessels we will use nearly five tons of coal for every ton of shipping that leaves the ways. Every three-inch shell fired from an American gun in the war against autocracy represents eighty pounds of coal used in its manu-

facture, and these shells are manufactured by the million.

With this enormous war demand added to the normal coal consumption of our railroads, industries and people, the United States is confronted with the necessity of supplying approximately 735,000,000 tons of coal during the coal year from April 1, 1918, to April 1, 1919. Of this amount about 100,000,000 net tons—a maximum year's production—come from the anthracite fields and will go largely to keep the people warm. The remaining 635,000,000 tons must come from the bituminous fields. The production of bituminous coal in 1917 was 554,000,000 tons—in 1916 it was a little more than 500,000,000. The gap between last year's production and this year's demands (at least 80,000,000 tons) must be bridged.

To Build Federal Power Stations

Chairman Sims of the House Interstate and Foreign Commerce Committee has introduced a bill carrying an appropriation of $200,000,000 for constructing and maintaining central power stations by the Government.

Explaining the need of the unusual measure on behalf of the Administration, Mr. Sims said: "We are facing a power shortage which is and for some time past has been acute and is hampering our program of essential war production. So this measure is introduced with the endorsement of the Administration and authorizes the President to erect super-power stations at the coal mines and at other points where he may deem them necessary or to extend financial aid to persons or corporations about to do so, and therefore designed to secure results of tremendous immediate and ultimate value to America. It has been most carefully prepared, has been considered in conferences attended by representatives of the Administration, by representatives of the great power companies and by economists who attack the problems presented from various viewpoints, and is endorsed by all of them.

"At present at least the four following pressing military needs are recognized: (1) Increased production of power available for war industries and shipyards. (2) Economy in the consumption of fuel. (3) Reduction in the railroad freight load, especially in the fuel load. (4) Increased production of metallurgical coke, toluol and ammoniacal liquor, all recovered from coal.

"In addition to war needs there is a widespread demand for increased production and adequate distribution of fuel, light, heat and power for cities, rural communities and industries, many not conveniently located as to existing or possible water power sites, which will continue and inevitably increase after the war when the country will return to normal conditions, and can and will compete for the trade of the world.

"The plan adopted to solve any one of these problems should primarily include conservation of transportation and increased production of coal products and power. The authority and application required for all these purposes are provided in the bill introduced."

Important Buildings Taken by Government

As previously announced, the Government has taken over the Grand Central Palace in New York and will convert it to hospital usage.

As a result of the general protest against the use of Battery Park as a site for a group of temporary office buildings, the Government has abandoned that project, but as there is necessity for office space, the Graphic Arts Building on Eighth Avenue, between Thirty-third and Thirty-fourth Streets, has been taken over, and all the present tenants will have to find other locations.

This twenty-two story building was completed less than two years ago. It was planned and constructed to house the printing industry. In addition to having the largest possible number of windows, the floors have been built to withstand the unusual loads and the vibration customary in structures where many large printing presses are in almost constant operation. Naturally the tenants of such a specially designed building have regarded their occupancy as practically permanent. The notice to vacate at a certain date gives time all too short and has created in many cases conditions which will practically cause a cessation of business.

There are few structures where space is available for these evicted tenants, and neither time, materials nor labor are accessible for the erecting of new ones. The magnitude of the Graphic Arts Building may be imagined when the statement is read that the Government expects to house 15,000 employees there when it takes possession.

Another prominent building said to be included in the list of structures now being considered by the Government for use as a reception hospital is the handsome structure built recently for the Yale Club. This is a twenty-two story building, with roof garden, kitchens, gymnasium and swimming pool, located at the northwest corner of Vanderbilt Avenue and Forty-fifth Street. The building possesses every possible requirement for adaptation to

hospital uses, and Federal officers recently went over the premises thoroughly with the view of taking it if necessary. The club management admits the interest of the Medical Department in this building, but at present is unable to confirm the report that it has formally been commandeered.

The modern office building owned by the United States Rubber Company, at the corner of Broadway and Fifty-seventh Street, also figures in the rumor involving military hospitals, but there has been no confirmation of the fact other than an acknowledgment of the canvass of the Federal officers and their acceptance of the structure if found desirable later.

Construction in Europe After the War

Investigations carried forward among the building trades in New York City show conclusively that projects totaling more than $5,000,000,000 will flow through the United States as a result of rebuilding in Europe after the close of the war.

It is also reasonably certain that the greater part of this reconstruction will be carried on by organizations in this country. France is negotiating already for more than $150,000,000 outlay in the reconstruction of her devastated cities. Orders from both France and England are pouring into the National Lumber Manufacturers' Association, which reports that in one English city—Birmingham—30,000 houses of the frame type ought to be replaced at the earliest possible moment, the community needing from 10,000 to 20,000 more houses at once. The proposed rate of construction is to be 5000 houses a year, the entire program calling for nearly 2,000,000,000 feet of American timber. The town council is preparing to handle operations which will involve $6,250,000 annually.

Lumber Production in 1917

A total computed lumber cut for the United States in 1917 of 35,831,239,000 feet is announced by the Forest Service. This figure is based on reports received up to May 15, from 16,408 sawmills out of the 24,815 believed to have operated last year. It is estimated that the actual cut in 1917, on the basis of compiled figures, was approximately 10 per cent less than the production in 1916.

The falling off in lumber production during the last year is attributed principally to largely decreased private building operations, the scarcity of labor in connection with small operations, transportation difficulties, curtailment of demand on the part of wood-using industries, and a more or less general dislocation of lumber distribution through ordinary channels of trade. A considerable portion of the total quantity produced was utilized in meeting the exceptional demands for Government construction and other war emergency projects, including ship material.

The State of Washington was again the largest producer, with a lumber cut of 4,750,000,000 feet; Louisiana was second with 4,210,000 feet, and Oregon third with 2,585,000,000 feet, crowding into the fourth position Mississippi with a cut of 2,425,000,000 feet.

Southern yellow pine, with a total of 13,539,464,000 feet, forms 37.7 per cent of the total cut. Douglas fir, its nearest competitor, is credited with 5,585,000,000 feet. White oak and white pine are each credited with 2,250,000,000 feet.

The number of mills in operation reporting in 1917 was smaller than for the two preceding years.

A comparison of the computed cut for 1917 with the total cut of the previous year in the larger producing regions shows a decrease of about 10 per cent in the Southern yellow pine group of States, a decrease of 23 per cent in the North Carolina pine group, and a decrease of 11 per cent in the Lake states. On the other hand there was an increase in production of 3 per cent in Oregon and Washington.

The Artistic Value of Darkness

In an article entitled "Adventuring in the Monumental," printed in *The Architect and Engineer of California*, B. J. S. Cahill, architect, discussing the decorative value of darkness, stated, in part:

"Darkness and death are interchangeable terms just as light and life are. In a commemorative ceremonial service for those not too intimately concerned the sense of gloom is appropriate, as in a dark church with slow music and black hangings.

"When Queen Victoria died I was in charge of a committee to decorate the old Mechanics Pavilion for a memorial service. Now, the public who attended came to express grief in a relative sense, which is really quite a different thing from the grief of a relative. A sense of solemnity had to be created. Those who remember the enormous spaciousness of the old pavilion, with its whitewashed posts and trusses and its huge high placed windows, will realize the difficulty of making this barn look solemn for a daylight service. But the newspaper reporters of the time agreed unanimously that this service was one of the most impressive things ever done in San Francisco. My part in this I achieved by darkening all the windows with innumerable rolls of black building paper tacked in place with wood

laths. I covered the open gallery rails with black and purple draperies hung with heavy festoons of green stuff and allowed no artificial light on the aisles at all, so that these draperies were not made thin and ineffectual by light shining through them. The sun bursts in the great central nave were alone allowed to be lighted. The effect was most impressive and when the 14,000 people who attended came in out of the bright sunlight to this dim cathedral they were silent and hushed in a way that was a revelation.

"Now in these instances darkness had a distinct artistic value to create awe in a large mass of humanity, whose sorrow was vicarious and collective rather than personal and intimate.

"When a few grief-stricken relatives or close friends are assembled the function of art is not needed to accentuate grief, but to alleviate it.

"Hence, cheerfulness and light are more suitable for occasions where grief is too real and poignant to be played upon by any art or artifice. Mausoleums and mortuary buildings generally should not be gloomy. The appropriateness of flowers at a funeral is obvious, and as flowers themselves are born of light, the inference is clear."

Steel War Requirements

The railroads of the country will consume the largest amounts of steel required by the Government, the War Industries Board has announced. Shipbuilding requirements come next, with the War Department's program third, and the Navy fourth.

To remedy the shortage of steel which is so acute that actual requirements cannot be met unless drastic action is taken by the steel producers and the Government, according to officials, the following measures were determined as urgent:

First, greater conversion of mills to the production of steel required in the war program. This will necessarily entail the elimination of many kinds of steel now being made for the non-war industries.

Second, increase in the coal supply, particularly bi-product coal, available for mills engaged in war work. Further curtailment of non-war industries, commandeering of hoarded coal, and diversion of bi-product coal from war industries that could use poorer grades may have to be resorted to if this situation is to be met. Shortage of this grade of coal is serious and declared to be the crux of the admittedly alarming steel shortage.

Third, shutting off of further steel shipments to industries other than those engaged in meeting war needs. Steel Administrator Replogle virturally has cut off this supply, refusing even a pound of steel for other than war purposes. In addition, where large stocks were obtained prior to the restrictions being placed on the lesser essential industries, the Government may commandeer their stocks.

Fourth, more rigorous conservation in handling of steel in the mills is demanded of the steel industry.

The Building Situation in New York

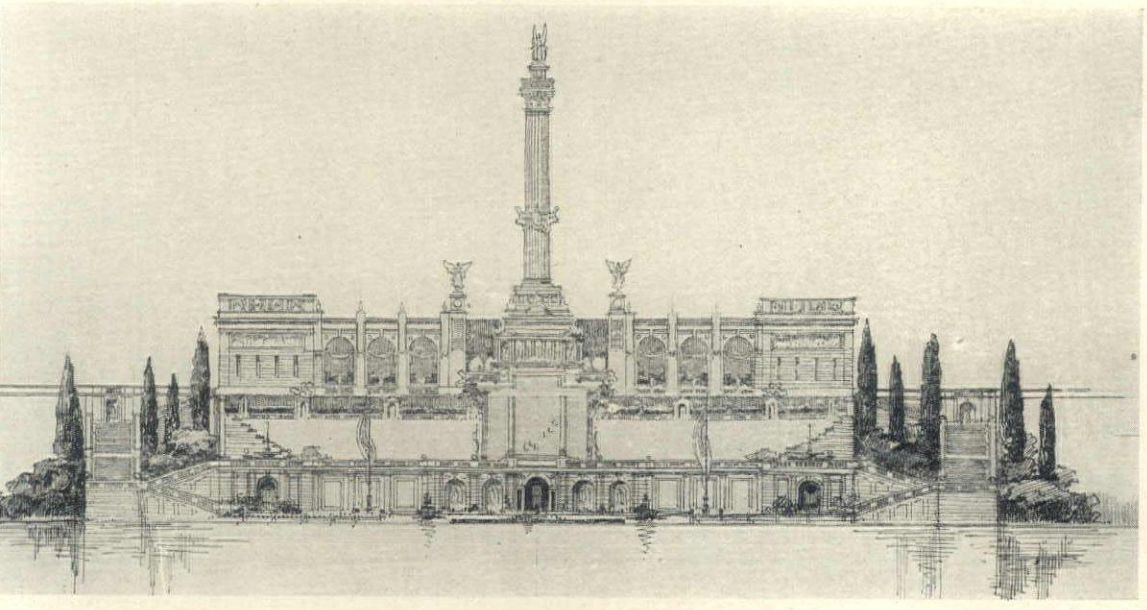
The New York *Times* in reviewing the condition in the building trade and the influence of such conditions on the country generally finds that there is a general building shortage of about 45 per cent. This shortage, it is stated, has been produced through the commandeering by the Government of structures in New York, Philadelphia, Boston and other large centers. The shortage in New York has been estimated to be about 33 per cent.

Practically all of the buildings commandeered for war uses are those housing heavy machinery to which all structures are not adaptable. The type of buildings that could be used for this machinery are already in heavy requisition by the Government for storage purposes, the general net result being that the trade looks for at least a partial relinquishment of restraint upon building construction within the near future, probably in the middle of winter.

Signs of the approach of a change in this respect were noticeable last week when conferences were held at the Biltmore regarding the application of recent rules to building materials and the fact that barges have recently been relinquished for work outside of Government requirements, thus offsetting the recent order promulgated shutting off supplies of sand, gravel and crushed stone from railroad cars. In Boston, Philadelphia, Newark and New York, and most of the Sound ports, it is possible to obtain basic concrete ingredients and rough clay products by barge and scow, but until the very recent past there has been such a demand for harbor bottoms that the whole building industry was threatened. It is due to a realization of this menace and the retarding effect it would have upon the war program that arrangements were made to release more barges for the relief of railroads and to permit necessary building construction to proceed, with moderation.

With practically no space of any kind, whether living, commercial, industrial or manufacturing, rentable to-day, the best opinion in the trade seems to be that the financial institutions will be given more latitude in placing loans, especially since the action of J. P. Morgan & Co. in announcing its plan to make call loans beginning to-day will relieve the

(*Continued on page* 321)



ELEVATION

Suggestion for a War Memorial on Riverside Drive, New York

By DONN BARBER

AS there will undoubtedly be a memorial erected on the part of the City of New York to commemorate the men who have served with valor in the world war, it is suggested that this memorial might properly take the form of a stadium to be erected as part of the improvement of Riverside Drive now already initiated by Grant's tomb.

This project could be made to bridge the Drive near the Tomb, and the improvement could be carried to the water's edge, utilizing the upper part of the composition for the more important war monuments, leading down through the stadium and concluding with a water gate. The stadium could be divided into two parts, north and south, to be treated as a memorial Valhalla, one side for the Army and one side for the Navy. In front of the stadium there could be an open court or plaza sufficient to afford maneuvering space for at least a division of troops. This space might also be used for pageants, concerts and open air meetings. Such a plaza would bridge the present tracks of the New York Central Railroad and lead down by easy flights of steps to a landing stage suitably designed as a water gate to provide a dignified place for the reception of distinguished guests of the nation.

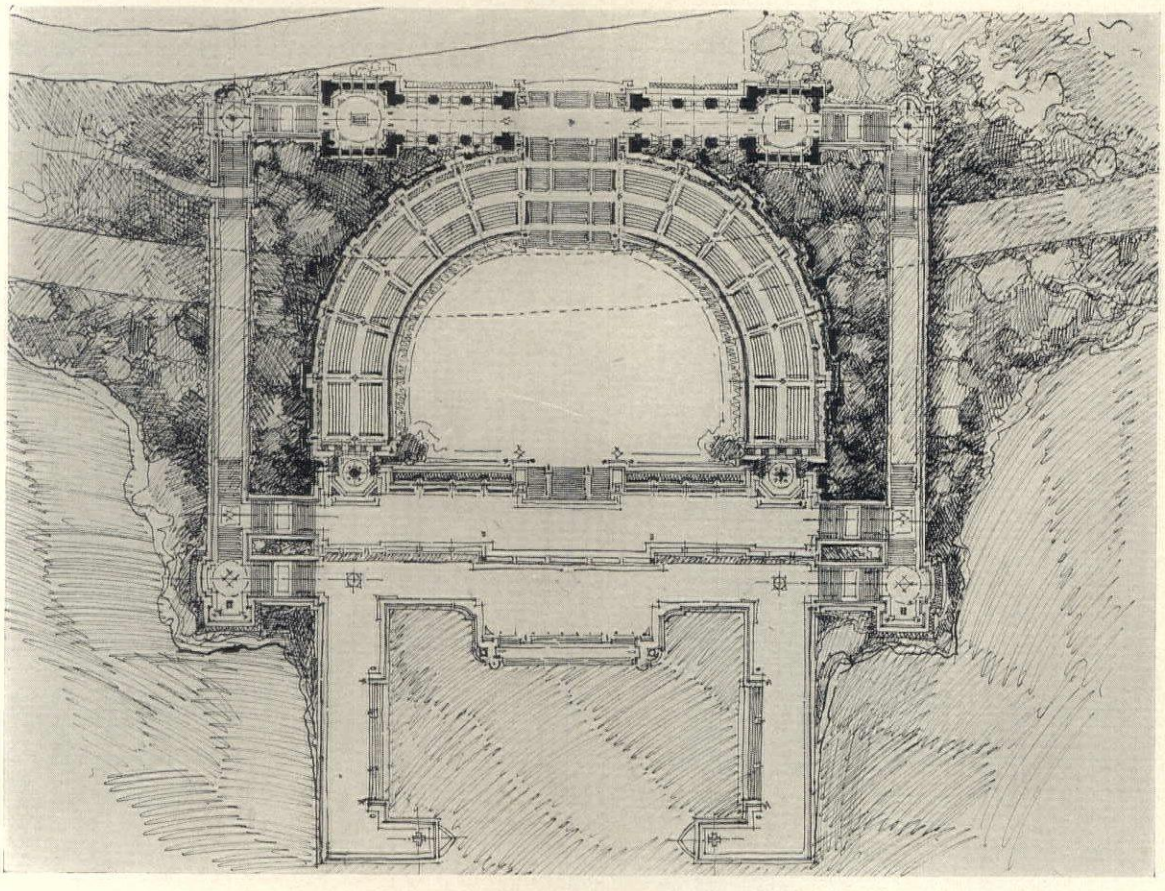
In designing this stadium and dividing it into two parts, an opportunity will be afforded to introduce pylons, niches and other suitable features to commemorate the individual acts of heroism of distinguished men in the army and navy who have died in this war. In addition to supplying a memorial which a grateful city will necessarily want to erect, it must be borne in mind that New York, the largest city of the United States, and its principal port of entry, has never had an adequate and dignified place wherein to receive distinguished guests

arriving on our shores from other countries. Further, since the adoption of a safer and saner celebration of the Fourth of July, our Memorial Day ceremonies and other events participated in largely by foreign-born citizens, there is a pressing need for some place of large seating capacity where these ceremonies may be held in a manner fitting the dignity of the occasion, and not as at present, scattered all over the city in make-shift and poorly constructed, unsightly reviewing stands.

The value of city areas for auditorium purposes has never been sufficiently considered. The war must surely cause New York to awake to its duty in commemorating the soldiers and sailors who have given their lives for the life of their country. It should build a memorial on a scale in keeping with the part it is taking in the war. This monument should be of a character in which architecture, sculpture, landscape gardening and the other arts could combine in a suitable memorial, erected by a patriotic and grateful people.

The accompanying drawings are purely suggestive. Architects will not need to be reminded that the opportunities for memorial tablets, commemorating specific acts of heroism by soldiers and sailors are, in this design, everywhere adaptable, nor that there are many locations where fountains, pools and cascades of running water could be decoratively placed.

A museum could also be planned, which, lighted from the rear wall, would be a fitting depository for trophies, flags and other mementos of the war.



GROUND PLAN

SUGGESTION FOR A WAR MEMORIAL ON RIVERSIDE DRIVE, NEW YORK

By DONN BARBER, ARCHITECT

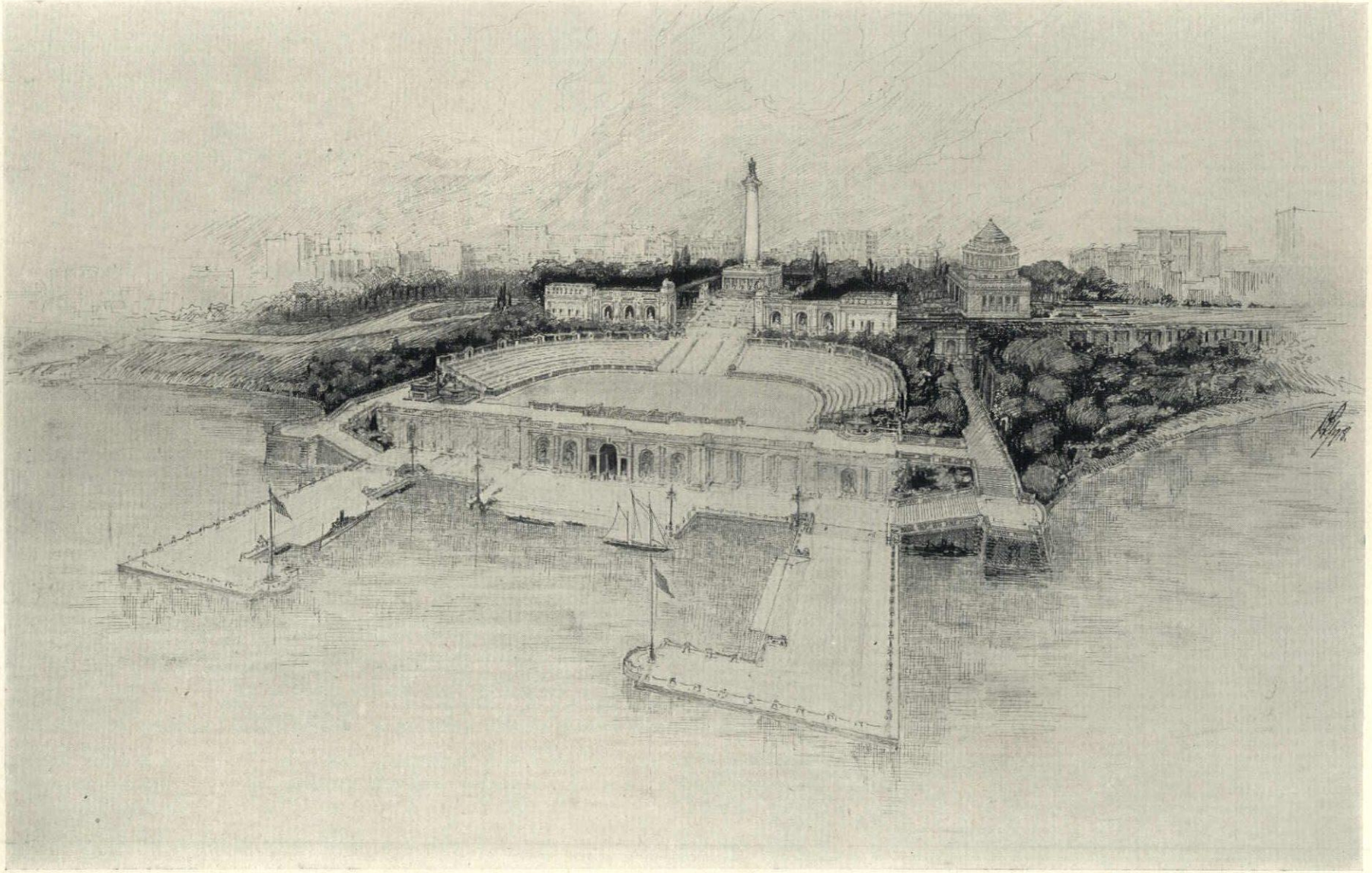


PLATE 81

BIRDS EYE VIEW

SUGGESTION FOR A WAR MEMORIAL ON RIVERSIDE DRIVE, NEW YORK

DONN BARBER, *ARCHITECT*

PLATE 82

FORT SHELBY HOTEL, DETROIT, MICH.

RICHARD E. SCHMIDT, GARDEN & MARTIN, *ARCHITECTS*

(Floor plans not available)

PLATE 83

FORT SHELBY HOTEL, DETROIT, MICH.

RICHARD E. SCHMIDT, GARDEN & MARTIN, *ARCHITECTS*

PLATE 84

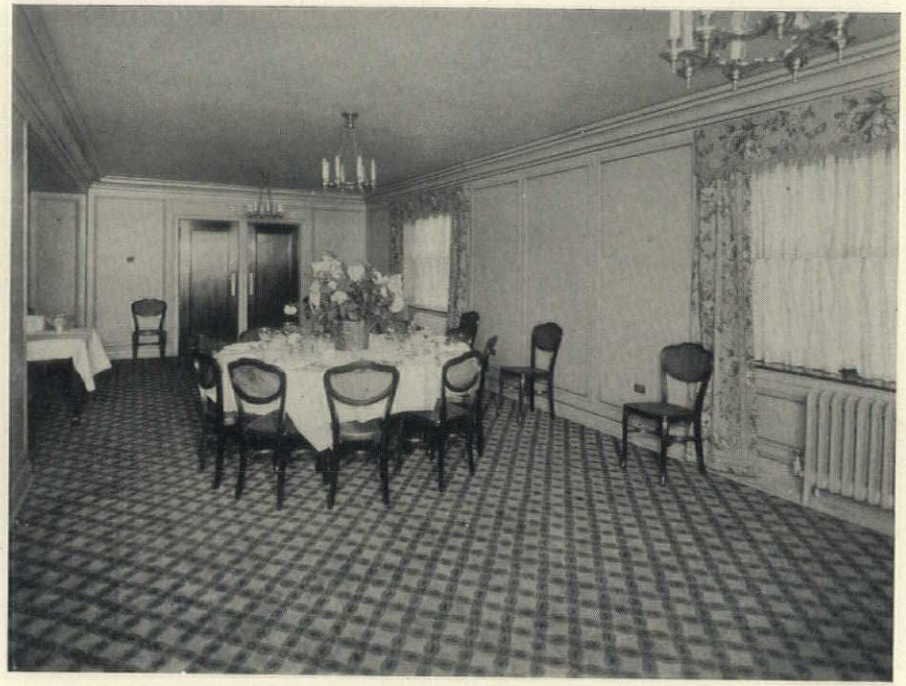
FORT SHELBY HOTEL, DETROIT, MICH.

RICHARD E. SCHMIDT, GARDEN & MARTIN, *ARCHITECTS*

PLATE 85

FORT SHELBY HOTEL, DETROIT, MICH.

RICHARD E. SCHMIDT, GARDEN & MARTIN, *ARCHITECTS*



FORT SHELBY HOTEL, DETROIT, MICH.

RICHARD E. SCHMIDT, GARDEN & MARTIN, *ARCHITECTS*

PLATE 86

Building Situation in New York

(*Continued from page 320*)

financial situation considerably. Investigation shows that far-sighted building material men have been in close touch with the situation and the sharp shift in building material prices in anticipation of an early definite movement is considered significant.

General reflection of price changes may be expected in all cities along the Eastern seaboard as the demand for new construction increases, and relinquishment of money for necessary building construction pertaining directly to war work or industries catering directly to it, is of brighter prospect to-day than at any time since the world war began, and will continue to be so, according to the best opinion in the trade, as the certainty of ultimate victory abroad becomes more and more apparent. The easement may be expected only in activities intimately associated with the war-winning program.

Government Storage Warehouses to Cost $18,000,000

The estimated cost for storage warehouses and other construction to facilitate the speedy handling of materials for use of the Army already erected or under construction in the United States is about $18,000,000. When completed they will provide approximately 33,800,000 square feet of warehouse space.

To Acquire Power Plants

Serious interruption of shipbuilding and other war industry by shortage of electric power is shown in reports which members of the House prepared to use in urging immediate action on the Administration Bill introduced by Representative Sims of Tennessee providing for Government acquisition and construction of power plants.

Information in the possession of Representative Sims indicates that additional electric power capacity of about 285,000 kilowatts in four districts east of the Mississippi River must be provided at once. Government plans contemplate unification of all power plants where necessary for war purposes, creating under the authority sought, systems from which could be drawn power for any section where the shortage is particularly serious.

The most serious power shortage exists in the Pittsburgh and Norfolk districts, but conditions around Philadelphia, Baltimore, and in Northern and Southern New Jersey are also considered grave.

Housing Projects Conducted by Department of Labor

The Department of Labor announces that it has under construction projects in forty-four industrial centers in the United States.

While every effort possible is being made to aid each community now suffering from a housing shortage, it has been found impossible, with only $100,000,000 appropriated by Congress to carry on this work, to give aid to all the communities entitled to consideration.

Museums of Comparative Architecture

That many very beautiful buildings are being remorselessly destroyed is of course one of the deplorable results of this war. But it is a cause for particular anxiety to know that many of them will pass into complete oblivion through the lack of any record of their existence.

The provision of photographs, measured drawings and replicas could be undertaken with valuable results as a means of preserving all desirable information regarding these buildings in the event of their destruction. If architecture is to be progressively better, it must profit from the result of past performance, and, since all structures are subject to decay, whether it be in the slow process of normal usage, or in the hastened ravage of war, means for their preservation should be considered.

I. T. Frary, in the current architectural press, has suggested that "museums of comparative architecture" be established in widely separated parts of the world, so far, one from the other, as practically to insure that all could not be destroyed simultaneously by any one great calamity.

An effort to provide such institutions would doubtless accomplish not only the immediate object, but would tend to arouse a greater interest among the people in the matter of worth while public buildings.

Fuel Supply for Cement Production Curtailed

The United States Fuel Administration has issued an order curtailing the supply of fuel for the production of cement twenty-five per cent. Provision is made whereby cement manufacturers may make cement in excess of their seventy-five per cent allotment, if this excess production is required by the necessities of the Government.

Waste

"Extravagance costs blood, the blood of heroes," says Lloyd-George.

War savers are life savers. The sinews of war are gathered largely from thrift. The war perhaps can be won partly by stored-up resources. We must save out of the present products of labor. The British people had to learn, as we must learn, that goods and services must be saved by all. Saving must become a habit. For war is a battle of resources. Germany saves with efficiency because she saves scientifically. She conserves her resources.

To waste in these times is to fight on the side of the Kaiser.

Limitations Upon Storage of Coal by Industrial Plants

The tremendously increasing demand for coal for special war purposes in the eastern part of the country, particularly for the Navy and Transport Service is making it necessary to draw more heavily on the Eastern coal fields than was originally contemplated.

In order to decide how best to secure this coal for these purposes with the least disturbance of the coal supply moving to other industries, a meeting of all state fuel administrators east of the Mississippi and also the states of Minnesota, North Dakota and South Dakota was recently held in Washington.

At this meeting it was decided that to accomplish the desired result it would be necessary to limit the amount of coal storage which industrial plants would be allowed to accumulate and to fix a uniform amount for each state.

United States Fuel Administrator Garfield announced the basic policy of the Fuel Administration as to storage as follows:

"Coal in excess of that required for current operations shall be delivered to plants not on the preference list of the War Industries Board only when it is not in demand for use before April 1, 1919, by consumers on said list, namely, railroads, the Federal Government, states, counties, public utilities, retail dealers, or manufacturing plants on the preference list.

"In carrying out this policy, allowance shall be made for differences in distance from the mines and for differences in transportation conditions which may require more or less storage at the beginning of winter to insure uninterrupted operation until the following spring."

The Springfield Memorial Building

A feature of the Illinois Centennial this Fall was to have been the laying of the corner-stone of the Centennial Memorial Building at Springfield, the state capital, plans for which are under the direction of Supervising Architect Edgar Martin. As war conditions have prevented starting construction of the building, a substitute ceremony will be held there on Oct. 6, which will at least serve to link this building in association with the celebration of the anniversary which was the inspiration for its projection and to fix its significance and date in the future history of the state.

The architectural interest naturally attaching to a monumental building of this character and association is enhanced by the fact that it is the first notable project undertaken by the state of Illinois with the co-operation of two state boards of advisory character, on both of which the architectural profession in Illinois is strongly represented. These are the Board of Parks and Buildings Advisors, two of the five members of which are architects, George W. Maher and Frank E. Davidson, and the Board of Art Advisors, the architect members of which are Martin Roche and Irving K. Pond. The two boards have adopted the plan of holding joint sessions as being conducive to progress and harmonious understanding.

The present policy of the state government is not only to avail itself of the advisory service of architects in matters relating to their profession, but also to consult with the architectural organizations, the Illinois Chapter, A. I. A., and the Illinois Society of Architects, and obtain from them lists of architects from which the selections may be made for appointment.

To Regulate Steel Used for Building Upkeep

The War Industries Board has issued the regulation desired in certain branches of the trade whereby steel for the upkeep of buildings and various facilities can be furnished under the preference list. The interpretation covers steel for the upkeep of light, heat, sanitation and power facilities. It appears that the War Industries Board has felt that this was included in the last item in the general preference list, "public utilities." Under the new ruling, the preference list covers steel needed to maintain these facilities in private and public buildings.

Department of Architectural Engineering

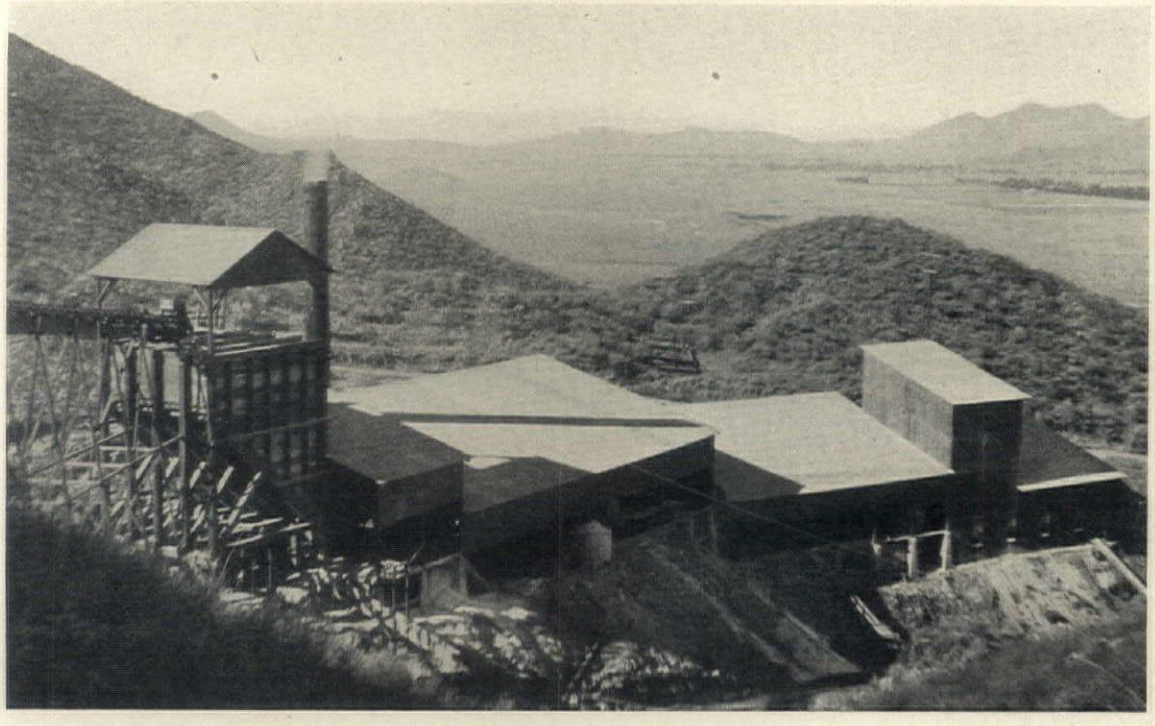


Fig. 1. A plant for calcining and grinding Magnesite in California. At the left is the receiving bin to which the ore is brought from the mine over the trestle by belt conveyor or cars.

The Use of Magnesite in Building Construction

In Three Parts—Part I

THE independence of the United States in things material has been a matter of very rapid growth during the past four years. Some of these developments are of great importance to architecture and the building industry. This has been brought about by locating the sources of supply of many raw materials and providing the means of producing them for manufacturing into finished products. In many instances the methods of manufacture have been perfected in foreign countries and here, subject to such changes as the nature of the native material demands. The production of magnesite is one of the most important of these economical developments, not only to the building industry, but also for its important function in the production of steel.

The use of magnesite in the building art is confined to its employment in finishing floors and walls, exterior stucco, insulating pipe covering, fire-retarding paint and other minor purposes. Its other uses are in the form of refractory products for lining blast and open-hearth furnaces used in the production of steel, crucibles and other high temperature resisting articles; as magnesium sulphite for the digestion and whitening of wood pulp for paper; for the manufacture of carbon dioxide; as

Fig. 2. A Magnesite mine, calcining and grinding plant

an absorbent in the manufacture of dynamite and an adulterant in paint; as a preventative of scale in boilers when sulphurous waters are used; and as refined magnesia salts used for medicinal and toilet purposes. It is apparent from these many and important uses that the development of this industry is an important source of wealth to this country.

Prior to 1914 the sources of supply were found in Austria, Greece, India and Canada, and to a limited extent in the Pacific Coast states. The amount of magnesite produced in and imported into this country, 1912-1916, is given in the table taken from the U. S. Geological Bulletin No. 666-BB, 1917.

MAGNESITE PRODUCED IN AND IMPORTED INTO THE UNITED STATES, 1912-1916, IN TONS OF 2,000 POUNDS

Year	Domestic Production, Raw	Imports for "Consumption"		Total Consumption Calculated as Calcined
		Raw	Calcined	
1912	10,512	17,905	125,252	139,460
1913	9,632	13,240	167,094	178,530
1914	11,293	13,354	121,817	134,140
1915	30,499	49,765	26,574	66,706
1916	158,759	75,345	9,270	126,322

The production of raw magnesite in the United States for the six months ending June 30, 1918, is 93,700 tons, and it is estimated that the production for the entire year will amount to 225,000 tons. The production for 1917 was 316,000 tons. Of this year's production approximately one-half was produced in California and the balance in Washington. The falling off of production in 1918 can be attributed to the almost entire stoppage of building

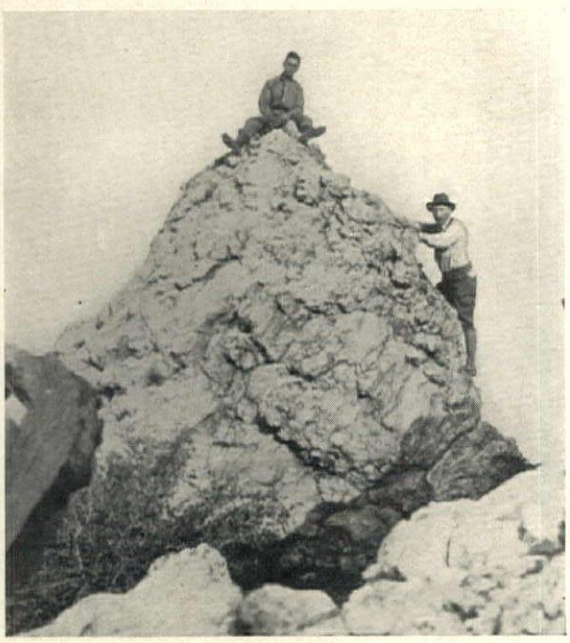


Fig. 3. A boulder of California Magnesite.

in India. Vertical kilns are used.

onstruction and the cheaper freight rates from anadian sources. The Canadian magnesite is sable only for refractory purposes and is imported or use in our Eastern steel mills. The Canadian roducer also has the advantage of cheaper labor nd a much lower freight rate.

The sources of supply, other than our own, are ndicated in the table taken from the Mineral Re-ources of the United States, calendar year 1914—art II, page 583, U. S. Geological Survey:

MPORTS OF MAGNESITE CALCINED, NOT PURIFIED, FOR FISCAL YEARS ENDING JUNE 30, 1912-1914, BY COUNTRIES, IN TONS OF 2,000 POUNDS

Country	1912	1913	1914
urope:			
Austria-Hungary	99,104	163,715	134,260
Belgium	25	.....	11
Germany	689	2,412	2,578
Greece	114	1,605	3,232
Denmark	.....	.....	58
Italy	.....	.....	.....
Netherlands	2,410	4,508	4,191
Norway	163	.....	.....
United Kingdom:			
England	61	1	12
Scotland	.....	.....	1
orth America:			
Canada	234	350	404
Mexico	81	.....	.....
sia: East Indies, British	57	.....	.....
Total	102,938	172,591	144,747

The mines of California were limited in their utput principally to the requirements of the West-rn states. The freight from the mines to the East-ern markets amounts to about $16 per ton, the raw material then costing the consumer from $18 to $25 per ton. The added expense of calcining and the resulting loss of weight made the minimum cost,

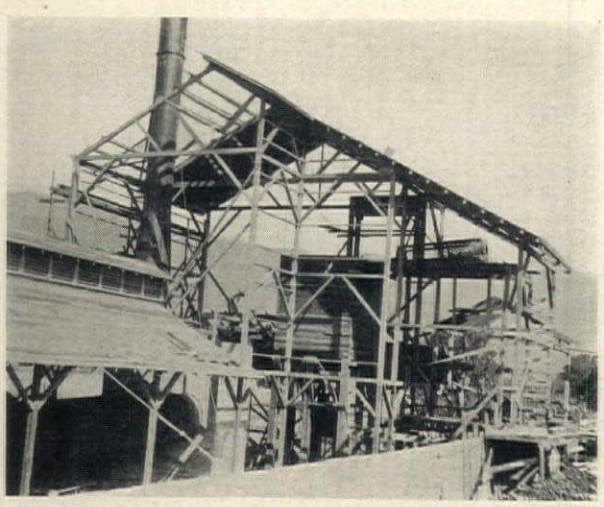


Fig. 4. In California. Constructing a crushing and calcining plant. At the left is the upper end of an 85-foot long rotary kiln.

even to large users, very much higher than formerly. The magnesite formerly imported from Austria, Greece, Holland or Norway was mined with cheaper labor, and with perhaps better port facilities and an ocean rate of perhaps only $1.50

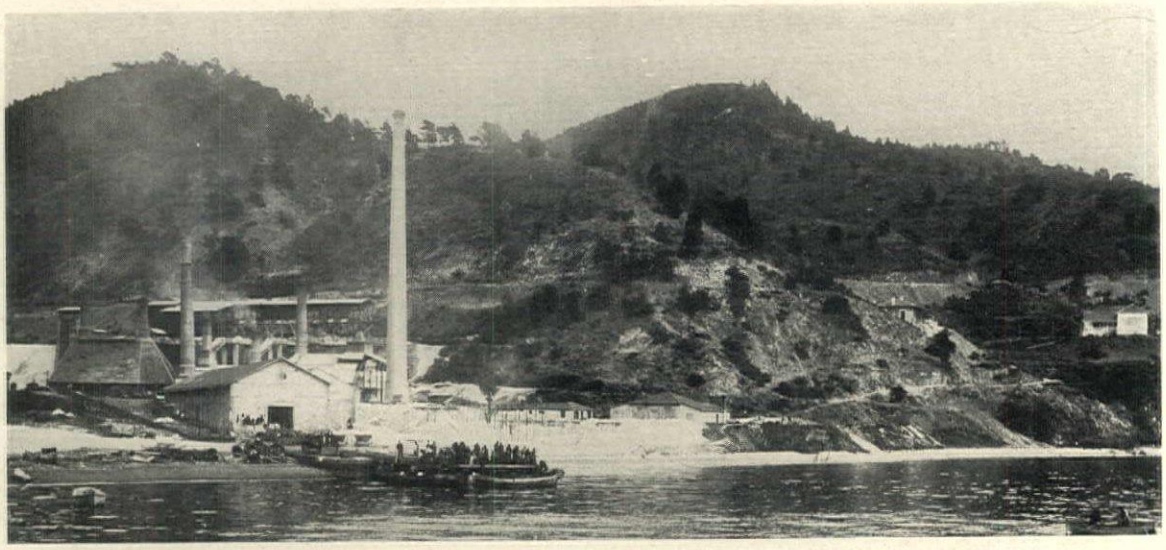


Fig. 5. A Magnesite mine, calcining and grinding plant at Saint John, near Linné, Island of Euboea, Greece.

or $2.00 per ton. For these reasons the foreign magnesite was used at one time in preference to the better grade of domestic production and prevented the development of the California mines. On the resumption of peaceful commercial relations the production of the native material will, for a time, be protected by the high water rates that will prevail. The increase in American bottoms may enable shipments from California by way of the Panama Canal with reasonable freight charges. If water rates to Greece and India become cheaper, and we have water and rail rates more costly in this

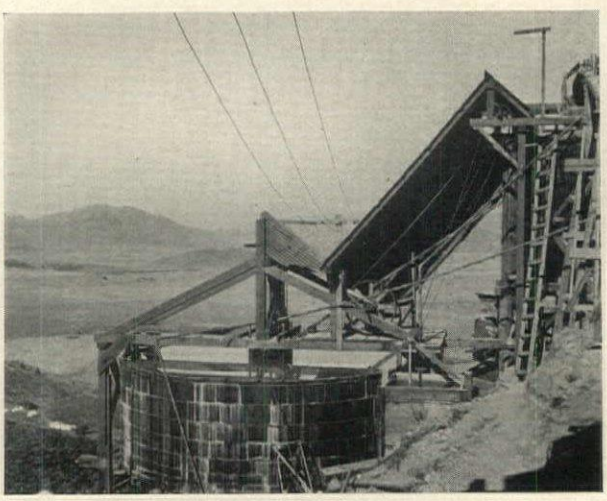


Fig. 6. In California. View of screen and washing tank where the raw material is prepared for the crusher and kilns.

country, it may be necessary to provide some means of protection to enable our native producers to supply our own needs. This industry is of such importance and is such a necessity to the steel, copper and building industry that it must be kept as a business asset and an item of economic importance.

Since 1914 we have practically been compelled

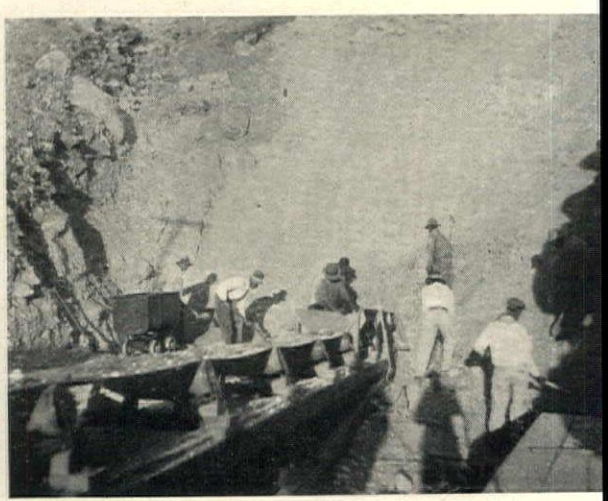


Fig. 7. In California. The pit, showing the belt conveyor used to transport the fine ore and the cars used for the large pieces of ore and waste. The white material is the magnesite ore.

to rely on our own resources. The result has been that the Western mines and calcining works have been brought to a production ability that can produce at this time more than the demand. We are amply able, when building operations resume their normal condition, to fill all demands for this material that may arise and this is one result of the stopping of importations of this material.

The presence of iron in the Austrian magnesite makes it especially adapted for refractory uses

hile the more pure Greek and California product more suitable for plastic purposes. We have iron this country which is added to the native mate-ial and the result is a refractory material equal to white massive material, rarely showing any crystalline structure, and in its most common massive form it is entirely devoid of cleavage or regular partings. It has a conchoidal fracture, showing a

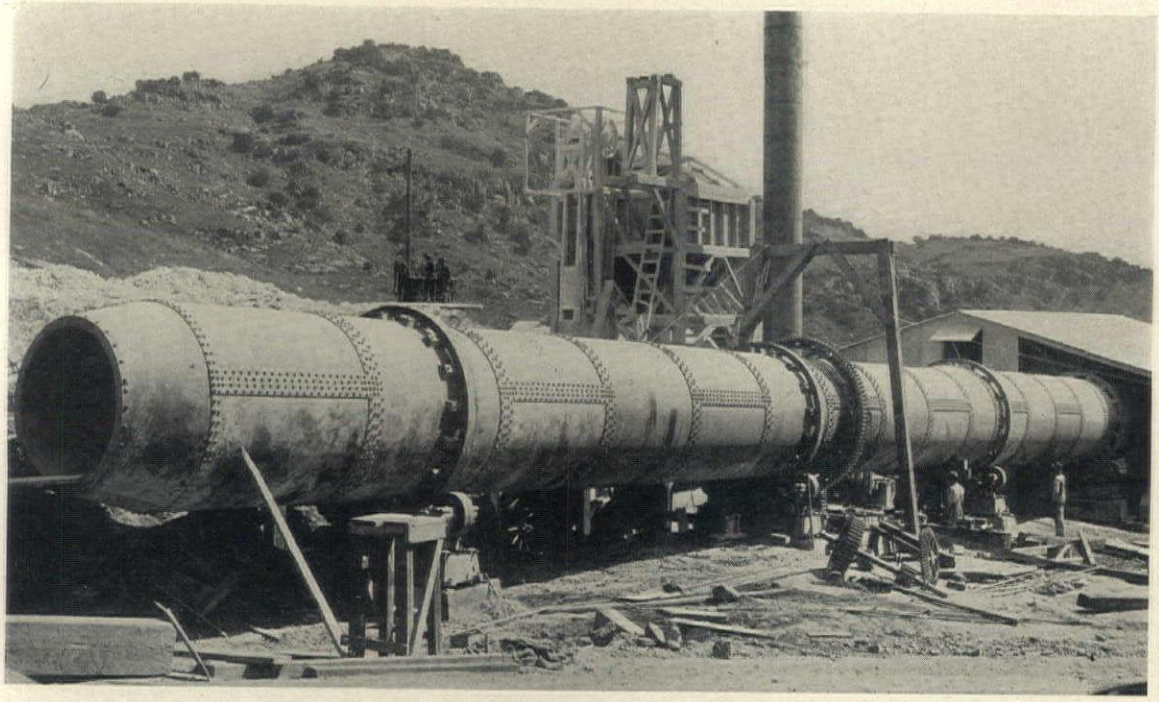


Fig. 8. In California. Installing an 85-foot oil burning rotary kiln for calcining the ore. Its size is evidenced by comparing with the men.

ny of that which has been imported. To-day this ountry is independent in the matter of magnesite roduction.

ig. 9. In California. Installing a belt conveyor in a pit.

The mineral magnesite is essentiallly the normal rbonate of magnesium, expressed chemically by e formula $MgCO_3$. It usually occurs as a dense smooth white opaque surface, resembling broken porcelain. Less pure varieties may be stained and colored or have a coarser granular structure.

According to Dana, magnesite has a specific gravity of 3 to 3.12. Therefore, a cubic foot of solid mineral weighs about 190 pounds. It is rated as 3½ to 4½ in the scale of hardness. The theoretically pure mineral contains 52.4 per cent carbon dioxide (CO_2) and 47.6 per cent of magnesium oxide (MgO). As the mineral occurs in nature it includes various proportions of clay, lime, silica, or serpentine, and to a greater or less extent the oxides of iron.

In 1853 Stanislaus T. Sorel discovered that a mixture of zinc oxide (ZnO) and zinc chloride ($ZnCl_2$) formed an extremely hard cement to which was given the name of Sorel cement. This mixture is not in general use and the name of Sorel cement is generally understood to mean a cement formed by a mixture of magnesium oxide (MgO) and magnesium chloride ($MgCl_2$).

Magnesite, after being quarried or mined, is broken into medium-sized lumps and calcined in vertical or rotary kilns to drive off the carbon dioxide. The weight of the carbon dioxide driven

off is theoretically equal to one-half the weight of the magnesite introduced, but owing to loss due to over-burning and under-burning, and to a small amount of water usually present, about two and one-third tons of natural magnesite are required to produce one ton of the finished magnesium oxide. The temperature of calcination is of great importance. If the magnesite be heated at a moderate temperature, considerably below that required for fusion, the dissociation of the magnesium carbonate into magnesium oxide and carbon dioxide may be fairly complete. The residual product is not inert to recombination as is the case when it is calcined at a much higher temperature. In practice this more moderate heating for the production of caustic calcined magnesite is so conducted that from 3 to 8 per cent of the carbon dioxide is left combined with the residue. The calcined product then partakes somewhat of the properties of caustic lime, and like lime, the magnesium oxide is susceptible to reaction with water and with carbon dioxide of the air. In this form it readily combines with certain other reagents, such as magnesium chloride, and it is upon this latter fact that its important use as magnesia cement is based.

It has been shown that carefully prepared and purified magnesite ($MgCO_3$) gives off all its carbon dioxide when treated at 950 deg. F. The conditions are somewhat different in the case of the natural mineral, and it is customary to calcine magnesite intended for cement at a temperature between 1300 and 1700 deg. F. the exact temperature depending largely on the amount and nature of impurities present. It is chiefly the iron oxide that governs the burning, a large iron content requiring a low temperature and a low iron content a high temperature.

When the calcining is carried on at a much higher temperature, 2700 to 3100 deg. F., essentially all moisture and combining carbon dioxide of the ma nesite may be driven off, and the heating being ca ried beyond this point the material may be broug to incipient fusion. The product then obtained known as dead-burned magnesite. Nearly

Fig. 10. Another view of the mine shown in Fig. 2.

shrinkage due to the calcining is then taken and the product resulting is a very dense, fire-r sistant and chemically inactive substance. It w not slake upon ordinary exposure as lime and cau tic magnesia do, nor will it combine with chemica for use as cement. The value of this refracto

Fig. 11. In California. A pit from which a tunnel driven into the mountain. From the top of the mounta shafts are dug through which the ore is dumped into t cars in the tunnel. These shafts are called "glory holes

material depends not only on its resistance to t corrosive action of heat and metallic slags, but al on the permanence of the forms in which it is p into the furnace. This permanence is due to a na ural bonding which tends to make the loose crush material cling together under furnace heat a thus makes brick forms moulded from it mo

durable. Bricks and granular furnace bottoms made of magnesite that lacks this bond break, and the magnesite floats off on the fluid molten metal and is lost in the slag. Thus, though magnesite that contains a small percentage of iron may be somewhat less resistant to extreme heat than a purer form, the slight fusibility given to the material by the iron tends to hold it in place. For this reason, in part, a type of magnesite so far found only in Austria-Hungary and Canada has been the principal source of the refractory magnesia used in this country. The fact that this dead-burned magnesia is more important commercially than the caustic calcined magnesia has militated against a standardization of the latter.

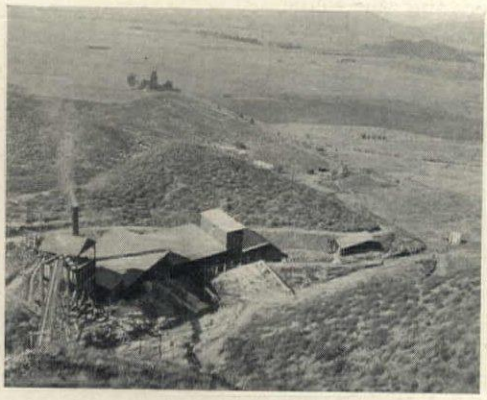


Fig. 12. The same plant shown in Fig. 1. View taken from near the point where the magnesite is mined.

The calcined magnesite is finely ground; a fineness such that not more than 10 per cent or less will be retained on a 120-mesh sieve is considered desirable. Grinding is best done with millstones, though tube mills have been used.

Since the importation of magnesium chloride has been stopped, its production in this country has been greatly enlarged. This is mainly a by-product in the manufacture of other substances. At salt works it is made from the bittern water or refuse left in the evaporating pans after the salt has crystallized out. Most of that which is produced in this country is made in Michigan and California. In combination magnesia cement has been analyzed by several chemists and the material appears to be constituted as $MgCl_2.5MgO.10H_2O$. The amount of H_2O or water of crystallization will vary with the age of the mass and the temperature conditions. In preparing magnesia cement it is customary to combine the materials by first mixing the magnesium oxide and dry aggregate thoroughly and then adding the magnesium chloride in the form of a solution. A solution of almost any strength will produce setting and a slight set may sometimes be obtained with water alone, but a solution having a density of about 20 deg. Beaumé (Sp. Gr. 1.16) is generally used. Some manufacturers make a semi-fluid mix of the cement and the solution and then add the aggregate. The magnesium oxide and magnesium chloride may be combined in dry form in any proportion desired, the resulting mix requiring only the addition of water and the aggregate. This method has proved to be very unsatisfactory and its use is abandoned. The preference is that the magnesium chloride be used as a liquid. It is sold in the form of a concentrated solution and reduced to the desired density.

The application of this material in the making of floors and as exterior stucco will be described in the following parts.

Reference can be had to the Bulletin of the University of Wisconsin, No. 879, entitled The Physical Properties of Magnesia Cement and Magnesia Cement Compounds, by Raymond Jefferson Roark, 1917; Bulletin 540, U. S. Geological Survey, 1912; The Production of Magnesite in 1914, by Charles G. Yale and Hoyt S. Gale, U. S. Geological Survey, October, 1915; Magnesite by Hoyt S. Gale, Bulletin 666-BB, U. S. Geological Survey, 1917; the Indian Magnesite Industry, by H. H. Dains, F. I. C., Journal of the Society of Chemical Industry, May 31, 1909, No. 10, Vol. XXVIII; Magnesite, Its Preparation and Technical Uses, by H. H. Dains, F. I. C., Journal of Chemical Technology, Nov. 1912.

Federal Employment Service

THE Division of Engineering of the United States Employment Service, recently instituted, gives its July record as follows: 468 applications for help were received from employers, 1314 applications for positions; forwarded 1063 applications and actually placed 483 men in positions. This branch of the Government Employment Service is intended to serve as a clearing house for the employment of Government engineers, although it may extend to private work in the future. It is urged by the division that engineers register, either through the local branch of the United States Employment Service or through the Division of Engineering at Chicago. This latter division is in charge of A. H. Krom, 29 South La Salle Street, Chicago.

Relocate the Factories

THOUGHTFUL men are looking forward to a reorganization of industrial, social and economic conditions in this country and throughout the world when a treaty of peace has been signed that shall bring the war to an end. Vast armies and navies are then to be demobilized and the soldiers and sailors of which they are comprised returned as quickly as possible to peaceful pursuits. The reabsorption into productive industries of four million men or more drilled in the arts of war must in some way be accomplished. At the same time millions of employees in great munition plants and other industries, engaged chiefly in producing the necessities of war, will have to be diverted to the production of the things needed in times of peace. The problem is how this may be done in a way that shall be reasonably satisfactory to the workers of the country, and at the same time shall not lead to an interim of stagnation of production and business. The transition must not be left to chance. Comprehensive plans of reconstruction should be formulated at once, writes C. C. McChord, member of Interstate Commerce Commission, and of Railroad Wage Commission, in the *Engineering News-Record*.

Workmen who have had opportunity to enjoy life as the result of adequate pay are not going to consent, if they can avoid it, to any reduction in their wage scale unless there are compensating benefits. It is equally certain that the era of extremely high prices for the necessities of life will not continue during times of peace. The great class of non-producers represented by clerks in offices and stores, salaried men in every calling, employees of public utilities and the like, cannot long continue to pay ever-increasing living costs unless they too receive further increases in rates of pay.

What is needed in this country is a wider diffusion of manufacturing industries and the local supply of the necessaries of life. There are many considerations that dictate a relocation of our manufacturing industries. It costs more to do business in a city than in the country. Land values and costs of construction of plants, taxes, etc., constitute charges that must be met from earnings. It also costs more to live in a city than in the country. A lower wage payment in the country than in the city would enable the workman to secure more comforts of life, to clothe his family better, and educate them more adequately. If the factory is located near the raw product there is saving in transportation costs which will be reflected in net earnings.

If wage scales are to be readjusted downward to meet conditions in times of peace, the wider diffusion of factories presents an alluring way out. What the workman desires, and what he has the right to demand, is opportunity to live in comfort. Reduction in the rate of his daily wage means, as he now sees it, lessened opportunity to secure to himself and his family those necessities which go to make comfort in daily life. In almost any country town of 1500 or more population in the Middle West or the South there is opportunity to live better and enjoy more of the real comforts of life, at materially lower wages than would secure even an approach to the same state of livelihood in any congested manufacturing center. In the country there are pure air and sunlight. The surroundings are clean, sanitary and moral. In such an atmosphere a workman can easily rear a family of sturdy boys and girls, and live a life of peace and happiness impossible for him to live in the crowded and unwholesome conditions of congested centers. In the country he is afforded opportunity to buy products of the soil first hand for his table at reasonable prices, and the admirable schools and religious institutions now in existence everywhere insure to his children every chance to lay the foundation of good citizenship.

There is hardly a town of 1000 population or more in the Middle West that from 1875 to 1895 did not endeavor to obtain, and succeed in obtaining, manufacturing industries. Many of these factories proved to be failures. Not all were properly located, but most of them should have survived and would have done so but for influences that made success impossible. Among the chief of these was the fact that the railroads favored certain manufacturing centers in the way of facilities and rates. Preferment to long hauls in large lots, the granting of rebates to large shippers, the levying of excessive rates against certain localities to make up for the meagerness of returns where keener competition forced the rates down, the killing off by the railroads of inland water traffic—all these conditions rendered it impossible for the factory in the small town to compete with that in the larger and more favored city. Hence it came about that the large part of our manufacturing is done in the cities.

The railroads, therefore, must play an important part in the readjustment that must be made in our industrial and economic conditions. Thoughtful study should be given to the equalization of rates for freight transportation. Transportation by boat on our rivers and coast lines should be encouraged to relieve rail carriers at congested cities and ports. Rates should be made and facilities provided so that each port of the United States shall receive its share of traffic under the most economical transportation conditions.

Industrial Information

Another Development in Concrete

The Atlas Portland Cement Co., 20 Broad Street, New York, has issued another of its attractive books on one of the newer aspects of concrete usage. It is entitled "Cast Stone," and without doubt its contents will prove something of a revelation to a great many men in the architectural profession and other branches of the building industry as well. There is no question but that the profession has ignored many of the possibilities of concrete, and among other things it has been blinded to the possible beauties of cast stone. One thing which may in part have prejudiced the architect against this material is the fact that it appeals to him often as being an imitation. The booklet under discussion treats of cast stone, not as an imitation, but as a synthetic product, and states:

"This is an age of analysis and synthesis. We are constantly analyzing natural substances, breaking them up into their constituent elements, and reproducing the original substances in the laboratory by a synthetic process—by gathering similar elements and combining them. In this process we may, by changing the proportions or adding new elements, procure in the synthetic product new qualities or augment such qualities as we wish accentuated for specific reasons."

The completeness and harmony of the relationship of this manufactured product to the more natural materials with which it is often used is very adequately and beautifully exemplified in the photographic illustrations found throughout the booklet. In fact, this photographic material, which constitutes the major portion of the book, is really the greatest argument in favor of the product, showing, as it does, by actual reproduction what can be achieved in this medium. There seem to be few purposes architecturally for which this cast stone cannot be used. We are shown examples of monumental, utilitarian and purely ornamental and decorative uses of the material, and in each case it fits well into its surroundings.

As it is pointed out in this monograph, cast stone has in addition to the advantage of being temporarily plastic a color and texture control which are worthy of note. It has also a charm unique to itself, and makes possible an expression which would be difficult to obtain in any other medium.

The exposition of the theme which this company has developed is thoroughly worth-while and should be of very genuine interest to the architect.

Water Flow Meters

In Bulletin No. 46501B, the General Electric Company, Schenectady, N. Y., describes its various types of flow meters for measuring steam, water, air, oil and gas. It is stated that G-E flow meters provide a means for accurately measuring the total flow of these substances through pipes or closed conduits, thus furnishing information of great value in the economical management of any manufacturing industry or central station. The needs of various classes of service are met by these meters. The types are: an indicating, recording meter, a graphic recording meter, an indicating meter for permanent installation and a portable indicating test meter.

The services to which these meters can be put are described in detail in this bulletin, as are the principles of operation of the different types. There is interesting illustration, in sectional and other construction drawings, of the mechanism of this instrument, and there are a great many photographs of the different sorts of installations. Price lists are given of all types and parts in all sizes and capacities. This bulletin and many others dealing with the products of this company will be sent, upon request, to those interested in these subjects.

Protective Lighting

The Edison Lamp Works of the General Electric Company, which has its general office at Harrison, N. J., has issued a bulletin—No. 43412—dealing with the uses of Edison Mazda lamps for protective lighting. The general principles involved in protective lighting, the apparatus which has previously been available, and that which is being developed, and the actual lighting units required for various purposes are all described fully, the whole consti-

tuting a most interesting discussion of a vital topic.

Another current bulletin issued by this organization is No. 43411, which takes up the subject of show-window and show-case lighting with Edison Mazda lamps. A great many reflectors of different types have been developed for these purposes, all of which are illustrated in this bulletin.

Stucco Houses for Industrial Workers

The Truscon Steel Company, Youngstown, Ohio, has published a booklet entitled "Permanent Homes Make Permanent Workers." This discussion first takes up some of the general problems involved in present industrial conditions, makes a comparison of English and American housing developments, and then elaborates on the use of stucco on Hy-rib metal lath for housing purposes. Various factors are quoted as demonstrating the peculiar value of this sort of construction for housing, including the fact that, after all, stucco on metal lath costs little more than any other desirable types of construction; that it is fire resisting, is readily available, both as to materials and labor; while the special advantages of the lath itself are that "the ribs of Hy-rib keep the lath surface away from the studs, so that no furring strips are necessary. The ribs also give exceptional stiffness to this metal lath, so that the studs can readily be spaced 24 inches and more."

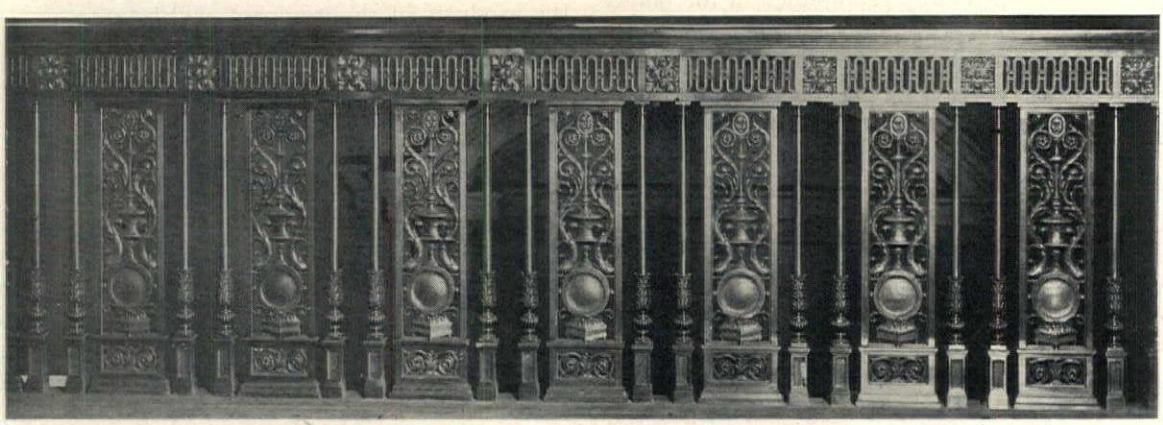
Detailed information is given about "How to Build a Hy-Rib Stucco House," followed by construction drawings in section, and a number of valuable floor plans for small dwellings.

This book is typical of a great mass of exceedingly valuable information on this important subject, which is constantly being presented to t architectural and building public. It is to be hop that the architect is availing himself of it.

Rigidity of Reinforced Concrete

In the August issue of *Concrete in Architect and Engineering*, published by the Portland Cem Association, offices in all principal cities, further e dence of the extreme rigidity of concrete buildin is given. Concrete buildings in territories subj to earthquakes have been advocated for some tin and many circumstances have pointed to the advi bility of their use. Threatened overturning fr undermining, due to flood, is an occurrence mo rare, and perhaps for that reason more interestin A photograph is shown in the bulletin of the bui ing under discussion, which is a reinforced concr power house, situated on a barge canal in New Yo State. The power house rested on a pile foundati and during the summer of 1916 an unprecedent flood in an adjacent stream caused undermining the piles and foundation. The greatest verti movement of the building was about 10 ft., whi took place in ten to fifteen minutes, as estimated various observers. An examination of the buildi made after the movement had terminated show that the power house was in perfect condition a no cracks were apparent in the concrete. Not pane of glass was broken.

The remainder of the bulletin is given over consideration of various timely subjects in their r lation to concrete. The subject of industrial hou ing and the war is treated in a leading article, f lowed by a discussion of coal storage in concr coal pockets. Photographs are shown of the worl biggest sheep shed, at Denver, Col., which is bu of reinforced concrete.



Henry C. Smith, Architect, San Francisco.

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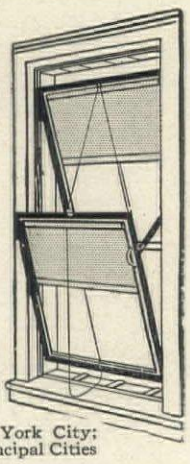

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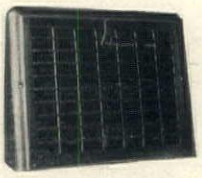

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M-6

BUILDING NEWS

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it at all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

ALABAMA

SHEFFIELD, ALA.—The Chamber of Commerce is contemplating the construction of a building costing approximately $30,000. J. C. Harris, chairman building committee.

CALIFORNIA

AZUSA, CAL.—I. Dingle, manager, Owl Fumigating Company, plans to build factory. Cost between $100,000 and $150,000.

CHICO, CAL.—Plans have been prepared by Chester Cole, Architect of Chico, for a two-story frame detention home, to be built at Oroville for Butte County, at a cost of $20,000.

FRESNO, CAL.—Rosenberg Brothers are contemplating the construction of a power plant at their fruit-packing plant on Cherry Avenue, to cost about $10,000.

MARE ISLAND, CAL.—The Government has authorized some extensive new construction work at Mare Island. Plans have been prepared for a structural shop, 300 x 700 feet, and a machine shop, 150 x 215, the two buildings to cost close to a million and a half dollars. Plans have also been finished and bids taken for two frame dormitories. Geo. W. Kelham, Architect, San Francisco.

OAKLAND, CAL.—Messrs. Reed and Corlett, Oakland Architects, are preparing plans for three manual training buildings for the Oakland Board of Education.

SAN DIEGO, CAL.—A. C. Martin, 430 Higgins Building, Los Angeles, has prepared plans for a one-story Class "A" theater building, 60 x 120, to be erected at Eighth Street and Broadway, San Diego.

SAN FRANCISCO, CAL.—J. R. Miller, Lick Building, San Francisco, has completed plans for a one-story brick emergency hospital building to be erected at the new Alameda plant of the Bethlehem Shipbuilding Corporation; also plans for a two-story and basement brick service building to be erected at the Bethlehem Alameda plant, and a one-story frame cafeteria, the two to cost $100,000. The cafeteria will accommodate 1500 men at one time.

SAN FRANCISCO, CAL.—Albert Schroepfer, Nevada Bank Building, San Francisco, has prepared plans for a four-story and basement brick apartment house to be built on Sutter and Jones streets, for Louis Stoff, cost $45,000.

SAN FRANCISCO, CAL.—George W. McCrea, First Nation Bank Building, Oakland, has prepared plans for extensive alterations to the residence of Carter of W. R. Grace & Company, on Vallejo Street, between Scott and Devisadero, San Francisco. The improvements are expected to cost $20,000.

SAN FRANCISCO, CAL.—The California Bible College has purchased the southeast corner of Gough and Geary streets, San Francisco, and will convert the building on the site into class-rooms. After the war a $50,000 college will be constructed, according to Dr. D. A. Russell, dean of the institution.

SAN FRANCISCO, CAL.—Willis Polk, San Francisco, is preparing plans for a million dollar residence for Col. D. C. Jackling at Hillsboro, San Mateo County, Cal.

SAN FRANCISCO, CAL.—Leo J. Devlin, Pacific Building, San Francisco, has completed plans for a four-story brick warehouse at Kansas and Alameda streets, San Francisco, for Dunham, Carrigan & Hayden, to cost $200,000.

SAN JOSE, CAL.—Benj. G. McDougall, Sheldon Building, San Francisco, made the architectural plans for the first unit of the Figprune Cereal Company's new factory, to be erected at Fourth and Lewis streets, San Jose. J. S. Bogart, Mills Building, is the construction manager.

STOCKTON, CAL.—J. M. Kroyer is contemplating the construction of a large tractor factory here, and organization of $5,000,000 corporation is to be formed.

WINTERS, CAL.—Henry Shermund, Mills Building, San Francisco, is completing working drawings for a $30,000 country house and outbuildings at Winters, Yolo County, for J. S. Sparks.

WOODLAND, CAL.—W. H. Weeks, Architect, San Francisco, has completed plans for the remodeling of the Byrns Hotel, at an approximate cost of $135,000.

COLORADO

STERLING, COL.—The Colorado Power Company is reported to be considering the construction of a large steam-driven electric power plant, to cost about $150,000, on a site recently acquired in Sterling.

CONNECTICUT

BRIDGEPORT, CONN.—Plans are being prepared for Locomobile Company of America, Main Street, for two five-story brick factories, concrete foundation to cost approximately $1,000,000.

STAMFORD, CONN.—Yale & Towne Mfg. Company, 548 Pacific Street, is contemplating the construction of six-story, 88 x 200 ft., reinforced concrete factory to cost approximately $200,000. J. A. Horne, general manager.

WATERBURY, CONN.—Waterbury Housing Company plans to build group of two and one-half-story houses, for workmen on Sylvan Avenue and Cook Street. Cost will not exceed $1,000,000.

DISTRICT OF COLUMBIA

WASHINGTON, D. C.—International Association of Machinists, Ninth Street and Massachusetts Avenue, purchased site on Ninth Street, N. W. and Mt. Vernon Place and plans to build five-story building, costing $125,000. W. H. Johnson, president.

WASHINGTON, D. C.—Plans have been prepared for the construction of an apartment building for John W. Lewis, 2004 Eleventh Street to cost $105,000. Address I. T. Hatton, 506 Fifth Street, N. W.

FLORIDA

JACKSONVILLE, FLA.—S. B. Hubbard, 32 West Bay Street, plans to rebuild. About $75,000.

GEORGIA

ATLANTA, GA.—The Government contemplates the expenditure of about $5,000,000 for the enlargement of Camp Hancock.

CHAMBLEE, GA.—Cantonment Division, War Department, Washington, D. C., is contemplating enlarging Camp Gordon, to cost approximately $1,250,000.

CORDELE, GA.—The Southern Cotton Oil Company will construct a peanut grading and shelling plant to cost approximately $50,000.

ILLINOIS

BENTON, ILL.—Illinois Central Railway Company, 135 East Eleventh Place, Chicago, had plans prepared by F. R. Judd, Architect, building one-story, 30 x 150 ft. freight house. About $30,000. A. D. Baldwin, chief engineer.

DECATUR, ILL.—American Hominy Company, 719 North Union Street, plans to build six-story mill.

INDIANA

BOONVILLE, IND.—The Graham Valve Company, Boonville, Ind., has taken bids for the erection of a one-story factory, 50 x 235 ft. A two-story office building will also be constructed.

FORT WAYNE, IND.—The Noble Motor Truck Corporation, Fort Wayne, Ind., has had plans prepared for a new factory, 100 x 192 ft., to be erected immediately.

INDIANAPOLIS, IND.—A one-story boiler plant, 40 x 60 ft., to cost about $14,000 will be erected by the Bemis Indianapolis Bag Company, Barth Avenue, Indianapolis.

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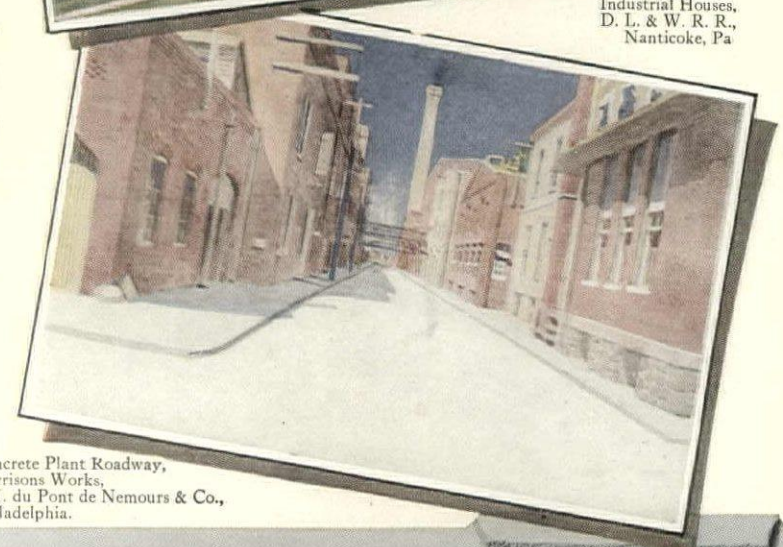

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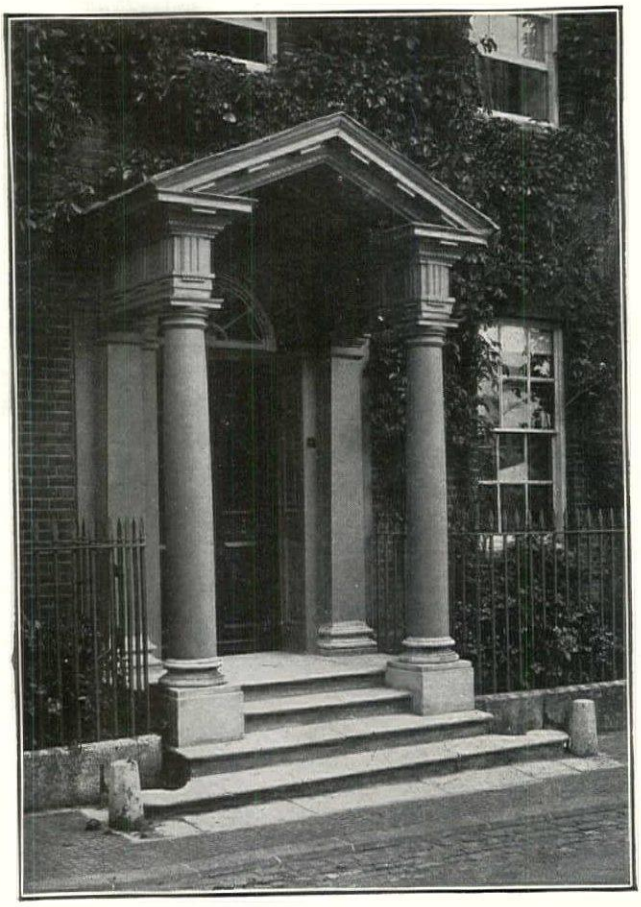

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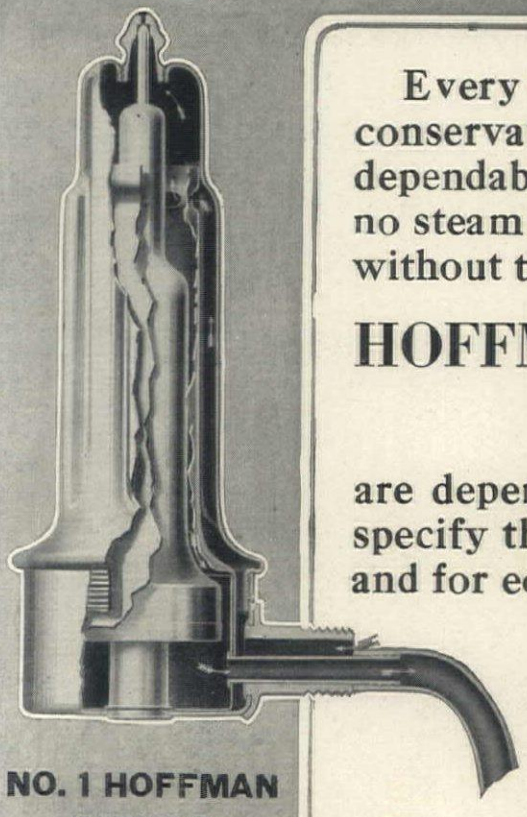

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KOKOMO, IND.—St. Louis & Western Railroad, Frankfurt, having plans prepared for one- and two-story, 32 x 200 ft. freight depot. About $80,000.

NEW CASTLE, IND.—Asylum to cost $63,000, one story, has been designed by Architect Herbert Foltz, 1456 Lemcke Annex, Indianapolis, Ind. Owner Indiana Epileptic Village, Dr. W. C. Van Nuys, superintendent, New Castle.

IOWA

ARCADIA, IOWA.—Brick church is to be built at a cost of $60,000.

BELMOND, IOWA.—A new corporation, to be known as the Iowa Valley Sugar Company, contemplates the construction of a sugar plant here to cost approximately $1,100,000.

DES MOINES, IA.—The Woman's Missionary Society of this city is contemplating the construction of a deaconess home to cost approximately $100,000.

MERIDEN, IOWA.—Bank to cost $12,000, one story and basement, 25 x 52, was designed by Lytle Company, Masonic Building, Sioux City, Iowa. Owner Meriden State Bank, care of Robert Gracie, Cherokee.

SIOUX CITY, IOWA.—Fairmont Realty Company will build apartment building and store. Architect G. W. Burkhead, 613 Iowa Building. Brick and reinforced concrete, three stories and basement, 96 x 200, $150,000.

WASHINGTON, IA.—Plans are being prepared by Architects Ecklund, Fugard & Knapp, Moline, Ill., for addition to church building for Presbyterian Church. Estimated cost, $25,000.

WATERLOO, IOWA.—E. J. E. Dempster, secretary school district, proposes a three-story, 56 x 125 ft., brick and reinforced concrete school, costing $80,000. J. G. Ralston, Waterloo, Architect.

KANSAS

INDEPENDENCE, KAN.—Bank and office building to cost $150,000, six stories and basement, 70 x 140. Architects Weary & Alford, Chicago, Ill. Owner Commercial National Bank, Geo. T. Guernsly, president, Independence. Drawing plans; bids will not be taken until after war.

PRATT, KAN.—Plans have been prepared for the construction of a school building. Estimated cost $110,000. W. E. Hulse & Company, Hutchinson, Kan., Architects.

PRATT, KANS.—Board of Education will erect a three-story, 126 x 300 ft., brick, stone and reinforced concrete high school. W. E. Hulse & Co., First National Bank Building, Hutchinson, Architects. About $150,000.

KENTUCKY

LOUISVILLE, KY.—Plans have been prepared for the construction of a warehouse, copper shop and drying room, brick mill construction. Estimated cost, $75,000. Brinton B. Davis, Starks Building, Architect.

LOUISIANA

NEW ORLEANS, LA.—Central Baptist congregation plans to build addition. About $50,000. Address W. A. Jordan, 4138 Cleveland Street.

MARYLAND

ANNAPOLIS, MD.—Bureau Yards & Docks, Navy Department, Washington, D. C., is contemplating the construction of an addition to Nurses' Quarters, Spec. 3340, to cost approximately $60,000.

MASSACHUSETTS

SHERBORN, MASS.—Plans, it is reported, have been prepared for the construction of a large power plant, to cost about $70,000, at the Sherborn Reformatory for Women. Mrs. Jessie D. Hodder is superintendent.

MICHIGAN

ANN ARBOR, MICH.—University of Michigan having plans prepared for hospital, $1,000,000. A. Kahn, Marquette Building, Detroit, Architect.

DETROIT, MICH.—Aluminum Castings Company, 6210 Carnegie Avenue, plans to build one- and two-story, brick, steel and concrete factories. About $100,000. W. H. Williams, care of Aluminum Castings Company, Architect.

DETROIT, MICH.—Board of Education will build heat, light and power plant for Cass Technical School. Costing $125,000. Malcomson & Higginbotham, Moffat Building, Architects.

GRAND RAPIDS, MICH.—A picric acid plant will be established by the Government in Grand Rapids at a cost of $6,000,000.

HIGHLAND PARK, MICH.—Architects Van Leyen & Schilling, 1115 Union Trust Building, Detroit, Mich., completed plans for remodeling residence into library. Owner Village of Highland Park, Delmer C. Gowing, deputy clerk. Two stories. $10,000.

MINNESOTA

KENNEDY, MINN.—Munition plant is to be built under government supervision for Studebaker Corporation, 2036 S Michigan Avenue, Chicago. $1,000,000.

MINNEAPOLIS, MINN.—Theo. Wirth, superintendent of parks, plans $10,000 bath house.

ST. PAUL, MINN.—Plans will be prepared for a big gymnasium costing $25,000 at the aviation mechanics school in St. Paul.

MISSOURI

MEXICO, MO.—Hospital: $65,000. Three- and four-story, 40 x 130. Architect Benn Elliott, Morris Building, Mexico. Owner Audrian County Hospital, J. M. Dry, chairman, Vandalia, Mo. Architect will take bids about Sept. 15; drawing plans.

ST. LOUIS, MO.—An effort is being made by E. Gengenbach, Industrial Commissioner for the Chamber of Commerce, St. Louis, to get the American Locomotive Company, Alexander Fletcher, president, of New York, to erect their proposed $13,000,000 factory in that city.

ST. LOUIS, MO.—The American Car & Foundry Company, St. Louis, Mo., will build a two-story machine and pattern shop to cost about $250,000. Brussel & Viterbo, Wright Building, are the architects and engineers.

MONTANA

BUTTE, MONT.—Y. M. C. A. plans to build new building. About $190,000. Address E. L. Mogge.

NEBRASKA

ADAMS, NEB.—Final plans are completed for bank. Owner, First National Bank. Architects, Tyler & Brandt, 418 Richards Building, Lincoln. One-story, 27 x 60. $14,000.

LINCOLN, NEB.—A building will go up at Eleventh and O streets, Lincoln, to cost $250,000. Six stories, 75 x 142 ft.

NEW JERSEY

NEWARK, N. J.—A machine shop, forge shop, electrical and other departments will be installed in connection with the new vocational school to be built by the Board of Education in Newark. The proposed building will be 250 x 250 ft. and will cost about $500,000.

NEW MEXICO

ROSWELL, N. M.—The Southern Pacific Company contemplates the erection of new shops in Roswell, to cost between $75,000 and $100,000. W. Hood is chief engineer.

NEW YORK

BROOKLYN, N. Y.—Church costing $65,000, five stories, has been planned by Architects Helmle & Corbett, 190 Montague Street. Owner Baptist Church of the Redeemer, East Eighteenth Street & Cortelyou Road, H. F. Perry, 2304 Newkirk Avenue.

BROOKLYN, N. Y.—Annie Efarkin, 203 Sand Street, has retained Architect A. Brook, 215 Montague Street, to design a garage costing $35,000, one story, 30 x 50.

BROOKLYN, N. Y.—Architect Chas. P. Cannella, 116 Herkimer Street, has plans drawn for a garage costing $20,000, one story, 100 x 100. Owner Kalmen Ress, 77 Gerry Street.

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BROOKLYN, N. Y.—Levy Bros. Realty Company, 189 Montague Street, having plans prepared by T. W. Lamb, Architect, 644 Eighth Avenue, New York City, for three-story, 117 x 180 ft. brick theater on Lincoln Place and Bedford Avenue. $200,000.

BROOKLYN, N. Y.—C. B. J. Snyder, Architect, New York Board of Education, Fifty-ninth Street and Park Avenue, has plans for a $450,000 school, three stories, brick, 143 x 145 ft. at Neptune Avenue and West Seventeenth Street, Brooklyn.

BROOKLYN, N. Y.—A five-story brick school, 125 x 197 ft., will be erected at N. Fifth Street and Driggs Avenue, Brooklyn, at a cost of $500,000. Plans are being prepared by C. B. J. Snyder, Fifty-ninth Street and Park Avenue, New York, Board of Education Building.

BROOKLYN, N. Y.—Columbia Machine Works plans a one-story brick factory, 80 x 161 ft., on Euclid and Atlantic avenues, to cost $50,000.

BROOKLYN, N. Y.—Baptist Church of the Redeemer will erect a five-story brick building at Ocean Avenue and Cortelyou Road, to cost $65,000.

BROOKLYN, N. Y.—James Bora proposes the construction of two four-story brick stores and seven-family structures, one 20 x 90 ft. and the other 20 x 89 ft., to cost $45,000, at Ovington and Fourteenth avenues.

BROOKLYN, N. Y.—Standard Oil Company has plans for a one-story brick shed, 109 x 114 ft., to cost $25,000, at Second Street and Gowanus Canal.

NEW YORK CITY, N. Y.—The Cantonment Division, War Department, is planning to build an extension to the Greenhut Building, to cost about $306,000.

NEW YORK CITY, N. Y.—The Jewish Welfare Board will build a $12,000 soldiers and sailors welfare building in Seward Park, Canal and Essex streets, N. Y., 60 x 90 ft. L. A. Abramson, Architect.

PORT JERVIS, N. Y.—Board of Education having plans prepared by W. T. Towner, Architect, 200 Morningside Drive, New York City, for three-story, 55 x 130 ft. brick and limestone school, costing $90,000. J. Gillander, chairman.

ROCHESTER, N. Y.—Church and parish house to cost $75,000 has been designed. One story, 40 x 80. Architects Foster & Gade, 132 Sibley Block. Owner St. John's Mission, Dr. John K. Burleson, care of St. Paul's Episcopal Church, East Avenue corner Vick Park.

OHIO

AKRON, OHIO.—Hippodrome Arcade Company, Akron Savings & Loan Building, will build two- and three-story theater and arcade, reinforced concrete, steel and brick, reinforced concrete flooring, on Water, Main and Center streets. About $350,000. S. H. Good, 511 Flatiron Building, Architect.

ALLIANCE, OHIO.—Loyal Order of Moose soon lets contract building two-story, 50 x 70 ft., brick and steel lodge and club on South Main Street. About $50,000.

BARBERTON, OHIO.—Peoples' Savings & Banking Company having plans prepared by Harpster & Bliss, Architects, Nantucket Building, Akron, for two-story, 40 x 100 ft. bank, costing $50,000.

BUCYRUS, OHIO.—Board of Education, Scott Township, R. F. D., Caledonia, plans to build two-story, reinforced concrete, brick and steel school, costing $50,000. W. Unger, P. O. Block, Architect.

CINCINNATI, OHIO.—The John H. McGowan Company will erect an addition at 54 Central Avenue to cost $40,000.

CINCINNATI, OHIO.—The Herschade Hall Clock Company will make improvements at McMillan and Essex streets to cost $25,000.

CINCINNATI, OHIO.—The P. W. Drackett Sons Company plans improvements on Spring Grove Avenue near Chickering Street, at a cost of $13,000.

CLEVELAND, OHIO.—Emile M. Uhlrich, 1900 Euclid Avenue, Cleveland, has designed a church, 100 x 125 ft. for Rev. J. P. Farrelley of the St. Elizabeth Catholic Church. $170,000.

CLEVELAND, OHIO.—Preliminary plans are completed for a criminal building costing $1,250,000. Owner, Cuyahoga County. Architect, William S. Lougee, 500 Marshall Building.

CLEVELAND, OHIO.—Water works plant to cost $750,000 is contemplated. Owner, City of Lakewood.

CLEVELAND, OHIO.—Architect preparing sketches for an $800,000 club house. Location, mouth of Rocky River. Owner, Cleveland Yacht Club, Josia Kirby, commodore, Rockefeller Building. Architect, S. H. Weis, 1032 Schofield Building.

CLEVELAND, OHIO.—Factory. $60,000. Location Woodhill Road. Site purchased. Owner, Van Dorn & Dutton Company, 2978 Woodhill Road.

CLEVELAND, OHIO.—Sand storage building will go up at a cost of $125,000 on Harvard Avenue and East Twenty-third Street. Owner, Aluminum Castings Company, E. L. Allyne, president and manager, J. H. Williams, consulting engineer, 6210 Carnegie Avenue. Plans now under way for one-story, 150 x 380.

CLEVELAND, OHIO.—Cleveland School of Art, Magnolia Drive and Juniper Road, will erect a 60 x 75 ft. brick and steel school at a cost of $60,000. Hubbell & Benes, 4500 Euclid Avenue, Architects.

CLEVELAND, OHIO.—U. S. Tool Company, 3160 West 106th Street, plans to build two-story factory. $50,000.

CLEVELAND, OHIO.—Western Machine Products Company, 7213 St. Clair Avenue, will build four-story, 4 x 53 ft. brick, steel and reinforced concrete factory $30,000.

LAKEWOOD, OHIO.—St. John's Episcopal congregation, 3118 Clinton Avenue, Cleveland, plans to build one and one-half-story, brick and stone church on Clifton Boulevard, costing $100,000.

LAKEWOOD, OHIO.—Mathews Company, Rocky River Bridge Approach, plans to build ship building plant here. Cost between $75,000 and $100,000.

LIMA, OHIO.—A $50,000 bank, two stories, 40 x 70 has been designed by Architect A. C. DeCurtins, 50 Opera House Block. Owner Citizens Loan & Building Company, Owen Francis, president, 321 N. Main Street.

LORAIN, OHIO.—Cleveland Macadam Company, 104 Leader-News Building, Cleveland, plans to build ship yard, reinforced concrete, brick and steel. $500,000.

LORAIN, OHIO.—The Baltimore & Ohio Railroad is making improvements at East Thirty-fifth Street and Vine Street to cost $60,000.

MAUMEE, OHIO.—Village having plans prepared by Bates & Gamble, Architects, 601 E. H. Close Building, Toledo, for two-story, 60 x 180 ft. brick and stone high school, concrete foundation. Costing $100,000.

PORTSMOUTH, OHIO.—Hospital is proposed to cost $100,000. Three stories and basement, 45 x 104. Architects Schmidt, Garden & Martin, 104 S. Michigan Avenue, Chicago. Owner Dr. H. A. Schirman, Portsmouth.

ROCKY RIVER, OHIO.—Cleveland Yacht Club, 64 Rockefeller Building, Cleveland, having plans prepared for two-story, 75 x 90 ft. club house. About $50,000. S. H. Weis, 1032 Schofield Building, Cleveland, Architect.

SANDUSKY, OHIO.—Erection of a general car shop here has been decided upon by the Baltimore & Ohio and New York Central railroads. An expenditure of $168,000 for the purpose has been made by the United States railway administration.

TOLEDO, OHIO.—Fifty additional acres have been acquired by The Air Nitrate Corporation for its Toledo plant.

TOLEDO, OHIO.—Architects Mills, Rhines, Bellman and Nordhoff, Ohio Building, will draw plans for the $200,000 auto training school on Toledo University grounds.

WARREN, OHIO.—Erie Railroad, Swetland Building, Cleveland, proposes building reinforced concrete and brick freight house, R. S. Parsons, 50 Church Street, New York City, chief engineer. $60,000.

WILLOUGHBY, OHIO.—J. H. R. Products Company plans to rebuild one-story, 90 x 138 ft. reinforced concrete, brick and steel factory. $30,000.

PENNSYLVANIA

CHESTER, PA.—Bissell & Sinkler, Philadelphia, Architects, have plans in progress for workmen's houses to go up for the Sun Shipbuilding Company in Chester. Two stories, brick.

LATROBE, PA.—Latrobe Hospital Association plans to build four-story, 31 x 65 ft., reinforced concrete and

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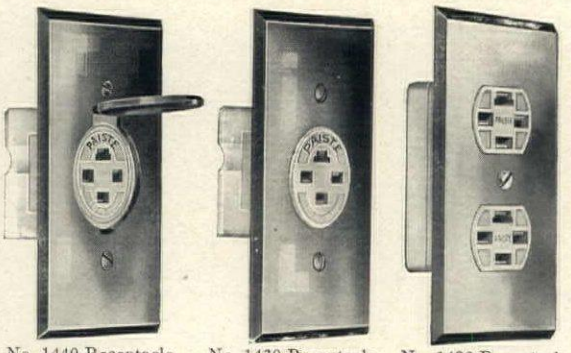

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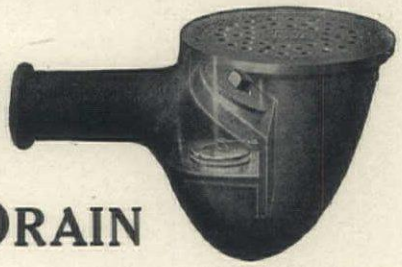

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brick, reinforced concrete flooring and concrete foundation hospital. About $60,000.

READING, PA.—Architect Wm. A. Fink, 426 Franklin Street, has designed a public garage to cost $25,000. Two story, 24 x 134. Owner C. H. Contos, 844 Penn Street.

SOUTH DAKOTA

ELK POINT, S. D.—Preliminary plans completed for church. Owner, St. Joseph's Roman Catholic congregation, Rev. R. F. Salmon. Architect, Wm. L. Steele, 502 United Bank Building, Sioux City. Brick construction. 50 x 150. $40,000.

LAKE ANDES, S. D.—Plans are in progress for an apartment building and store. Owner, P. P. Smith. Architects Beuttler & Arnold, 609 Security Building, Sioux City. Brick, two stories and basement, 25 x 35, 25 x 100.

TENNESSEE

MEMPHIS, TENN.—General hospital has been designed by Architects S. Hannaford & Son, sixth floor, Hulbert Block, Cincinnati, Ohio, to cost $400,000.

TEXAS

ATLANTA, TEX.—Atlanta Light & Ice Company plans to rebuild plant recently destroyed by fire with loss of $70,000.

DALLAS, TEX.—Trinity Products Company, Hutchins Road, plans to rebuild factory recently destroyed by fire with loss of $100,000.

HOUSTON, TEX.—The machine shop of the Lucey Mfg. Company, Houston, Tex., which was recently destroyed by fire, will be rebuilt at a cost of about $100,000. It manufactures oil well equipment and supplies.

HOUSTON, TEX.—Lucey Manufacturing Corporation, 305-308 Texas Company Building, plans to rebuild machine shop at 1418 Car Street. Loss $150,000.

SAN ANTONIO, TEX.—G. B. Ellgeston and H. H. Todd, 217 South Grand Street, Gainesville, plan to build oil refinery. About $350,000.

VIRGINIA

HOPEWELL, VA.—The Dupont Explosive Interests are preparing for a further expenditure of $3,000,000 on the construction of a new village in Hopewell, to contain 700 houses, community club building, church, etc.

LEE HALL, VA.—Orders have been issued by the War Department for additional construction at Camp Abraham Eustis, Lee Hall, Va., to expedite training men for heavy artillery. An expenditure of $1,940,800 will be made and will cover schools, garages, etc., etc.

RICHMOND, VA.—First Baptist congregation plans to build in West End. About $1,000,000. Address W. S. Forbes.

WASHINGTON

SEATTLE, WASH.—Boeing Airplane Company, 300 West Front Street, plans to build a one and one-half-story, 200 x 200 ft., assemblying plant to cost $50,000. Bebb & Gould, Securities Building, Architects.

WEST VIRGINIA

HUNTINGTON, W. VA.—Chesapeake & Ohio Railroad, Ninth and Main streets, Richmond, Va., plans to build new wing, brick. About $50,000. E. W. Grice, Richmond, engineer.

WISCONSIN

CRYSTAL FALLS, WIS.—Derrick Hubert, Menominee, Architect, has prepared plans for a three-story brick hotel to cost $40,000.

KEWAUNEE, WIS.—Kewaunee Public Hospital Association, Miss Currier, president, plans a $50,000 hospital. Architect not selected.

MILWAUKEE, WIS.—Tannery is to be built for Albert Trostel Leather Company, 899 N. Water Street. Architect, E. R. Liebert, Colby-Abbott Building. One-story, 48 x 180. $20,000.

SOUTH HAVEN, KAN.—S. S. Voigt, Barnes Building, Wichita, has plans in progress for a $50,000 high school, 74 x 93, two stories, brick.

WYOMING

RIVERTON, WYO.—Wyoming Montana Company plans to build potash reduction plant. About $300,000.

FIRE LOSSES

Reports of fires published in this department include only cases in which the magnitude of losses sustained and the surrounding circumstances indicate the probability of restoration or reconstruction.

ASHLAND, N. H.—The municipal electric plant was destroyed by fire causing a loss of about $50,000.

BAR HARBOR, ME.—Loss of $100,000 is the result of fire in the Florence Hotel, Bar Harbor, Me.

BIRMINGHAM, ALA.—The Magic City Oil Company is victim of a $100,000 fire which destroyed a large plant on Twelfth Avenue and Fortieth Street. L. M. Porter, manager.

CANTON, OHIO.—Loss of $1,500,000 is the result of fire in Canton, Ohio, which started in the Klein & Heffelman dry goods and furniture store on Tuscarawas Street, causing damage in that building alone of $200,000.

CHICAGO, ILL.—A $200,000 fire destroyed the Willoughby Building in Chicago, with its large stock of army uniforms. It was occupied chiefly by tailors specializing in army clothing.

COLUMBUS, OHIO.—The King Avenue Methodist Episcopal Church was totally destroyed by fire at a loss of $75,000. Rev. T. N. Campbell, pastor.

DOBBS FERRY, N. Y.—Damage estimated at $250,000 was done by fire in the business section of Dobbs Ferry, west of Main and north of Chestnut streets.

HANFORD, CAL.—The Central California Fruit Canning Corporation sustained damage of $200,000 caused by fire.

LINCOLN, CAL.—The extensive pottery plant at Lincoln, California, of Gladding, McBean & Company, was recently destroyed by fire, entailing a loss of several hundred thousand dollars.

LOCKPORT, LA.—The mill of the Lock-Moore Lumber Company, Lockport, La., has been destroyed with a loss of $200,000. It will be rebuilt.

MARIANNA, ARK.—Fire at Marianna, Ark., destroyed the Arkansas Light & Power Co.'s plant with a loss on equipment of about $40,000.

MEMPHIS, TENN.—Fire swept the Hall Building, Memphis, causing damage of $90,000.

MT. KISCO, N. Y.—Fire destroyed the Mt. Kisco residence of A. H. Smith, former president of New York Central Railroad, with a loss of $150,000.

OWENSBORO, KY.—The Green River Distilling Company has suffered a fire loss estimated at $3,000,000.

PHILADELPHIA, PA.—The Junger Maennerchor Building, Sixth and Vine streets, Philadelphia, burned with a loss of $200,000 to property.

SHIRLEY, ME.—Fire caused a loss of $100,000 in the mill of the Shirley Lumber Company, Emmons Stacey, manager.

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Gillis & Geoghegan, 545 W. Broadway, N. Y. C. "The G. & G. Telescopic Hoist"; Model A, hand power cellar to sidewalk; Model B, cellar to wagon; Model C, like A, but electric power; Model D, like B, but electric power.

Otis Elevator Co., 11th Ave. and 26th St., N. Y. C. Automatic coal and ash hoists, blast furnace and ship hoists.

FIREPROOFING MATERIALS

Johns-Manville, H. W., Co., N. Y. C.

METAL LATH:

Berger, The, Mfg. Co., Canton, Ohio.

Truscon Steel Co., Dept. 68, Youngstown, Ohio. Representatives in principal cities. "Hy Rib," "Rib" lath; "Diamond Mesh" lath.

FIRE PROTECTION

HOSE:

United States Rubber Co., New York City. Cotton-Rubber Lined; "Eureka" Paragon and "Red Cross" Brands. Unlined Linen-Hose; "Eureka Best," "Eureka 20th Century" and "Eureka Worthy" Brands.

FLOORS

COMPOSITION:

Johns-Manville, H. W., Co., N. Y. C.

Franklyn R. Muller & Co., Waukegan, Ill.

FOUNDATIONS

PILES:

Raymond Concrete Pile Co., 140 Cedar St., N. Y. C. "Raymond" concrete piles are made by driving a reinforced steel shell which is left permanently in the ground. This shell is then filled with concrete.

FURNITURE AND DECORATIONS

CHURCH:

Kundtz, The, Theodor, Co., Cleveland, O. Church and auditorium seating.

DRAPERIES, UPHOLSTERIES, WALL COVERINGS:

Chase & Co., L. C., 89 Franklin St., Boston, Mass. "Chase" Mohair Velvet Coverings.

Standard Oil Cloth Co., Inc., The, 320 Broadway, New York. "Sanitas" Tinted, Decorative and Glazed. Fast colors, sanitary. For private homes, hotels, auditoriums, institutions, etc.

METAL:

Canton Art Metal Co., Canton, Ohio.

ALPHABETICAL INDEX OF ADVERTISERS ON PAGE 34

HARDWARE

BOLTS:

Corbin, P. & F., New Britain, Conn.

BUILDERS' HARDWARE:

Corbin, P. & F., New Britain, Conn.
Stanley Works, The, New Britain, Conn.

BUTTS AND HINGES:

Corbin, P. & F., New Britain, Conn.
Stanley Works, The, New Britain, Conn. (Ball-Bearing)—Steel, brass, bronze.

DOOR CHECKS:

Corbin, P. & F., New Britain, Conn.

GARAGE HARDWARE:

Stanley Works, The, New Britain, Conn. Garage door holders and garage door hinges.

HEATING, VENTILATION PLUMBING

BLOWERS AND EXHAUSTERS:

Buffalo Forge Co., Buffalo, N. Y.

DRINKING FOUNTAINS:

Cahill Iron Works, The, Chattanooga, Tenn.

FLOOR DRAINS:

Crampton-Farley Brass Co., Kansas City, Mo.

FURNACES:

Hawley Down Draft Furnace Co., Easton, Pa.

LAUNDRY TUBS:

Cahill Iron Works, The, Chattanooga, Tenn.

LAVATORIES:

Cahill Iron Works, The, Chattanooga, Tenn.

PIPE, IRON:

United Lined Tube & Valve Co., 173 Franklin St., Boston, Mass. Lead, tin or brass lined iron pipe.

PIPE (Steel):

Youngstown Sheet & Tube Co., Youngstown, O.

REGISTERS:

Waterloo Register Co., Waterloo, Iowa.

SINKS:

Cahill Iron Works, The, Chattanooga, Tenn.

SINKS (Slop):

Cahill Iron Works, The, Chattanooga, Tenn.

TANKS (Closet):

Cahill Iron Works, The, Chattanooga, Tenn.

TRAPS (Radiator):

Johns-Manville Co., H. W., New York City.

TRAPS (Steam):

Jenkins Bros., 80 White St., N. Y. C.
Johns-Manville Co., H. W., New York City.

TUBS (Bath):

Cahill Iron Works, The, Chattanooga, Tenn.

URINALS:

Cahill Iron Works, The, Chattanooga, Tenn.

HEATING, VENTILATION, PLUMBING—Continued

VALVES (Air):

Hoffman Specialty Co., 130 No. Fifth Ave., Chicago, Ill. Siphon Air valves; Siphon Air and Vacuum valves; "Air Line" valves; Junior Quick Vent Air valve; Quick Vent "Float" air valve; Quick Vent "Float" Air and Vacuum Valve; Return Line valve for vapor, vapor vacuum, modulating and vacuum heating systems; vapor vent valve.
Jenkins Bros., 80 White St., N. Y. C.

VALVES (Radiator):

Jenkins Bros., 80 White St., N. Y. C.

VALVES (Steam):

Jenkins Bros., 80 White St., N. Y. C.

VALVES (Water Line):

Jenkins Bros., 80 White St., N. Y. C.

VAPOR HEATING SYSTEMS:

American Dist. Steam Co., No. Tonawanda, N.Y.

VENTILATORS:

Burt Mfg. Co., The, 77 Main St., Akron, O. Manufacturers of all types of ventilators, both stationary and revolving.

HOISTS

(See Elevators and Hoists)

INSULATION (Sound and Heat)

BUILDING:

Cabot, Samuel, Inc., Boston. "Cabot Quilt."
Johns-Manville Co., H. W., New York City.

LIGHTING FIXTURES

GLASSWARE:

Mitchell-Vance Co., 503 W. 24th St., New York City.
Northwood, H., Co., Wheeling. Lighting Glass.

METAL:

Mitchell-Vance Co., 503 W. 24th St., New York City.

MUSICAL INSTRUMENTS

ORGANS:

Kimball, W. W., Co., Chicago, Ill.

ORNAMENTAL BRONZE AND IRON

Polachek, John, Bronze & Iron Co., 480 Hancock St., Long Island City, N. Y.
Winslow Bros. Co., 4600 W. Harrison St., Chicago, Ill.

PAINTS, VARNISHES, STAINS

PAINT (Steel Protective):

Dixon, Joseph, Crucible Co., Jersey City, N. J.

PAINTS, VARNISHES, STAINS —Continued

STAINS:

Cabot, Samuel, Inc., Boston. "Cabot's" Creosote Stains, Stucco Stains, Brick Stains, Old Virginia White and Old Virginia Tints.

VARNISHES:

Glidden Co., Cleveland, O. Glidden architectural finishes, including varnishes, stains, enamels, etc.

PARTITIONS

METAL:

Berger, The, Mfg. Co., Canton, Ohio.
Interior Metal Mfg. Co., Jamestown, N. Y.; Bankers Trust Bldg., 501 Fifth Ave., N. Y. Interchangeable Hollow Metal Partitions.

PLASTER

(See Cement and Plaster)

PLUMBING

(See Heating, Ventilation, Plumbing)

REFRIGERATION

REFRIGERATING APPARATUS:

Johns-Manville, H. W., Co., New York City.

ROOFING

ASBESTOS:

Johns-Manville, H. W., Co., New York City.

SHEET METAL:

American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.

SLATE:

Rising & Nelson Slate Co., West Pawlet, Vt.; 101 Park Ave., N. Y. C. Special slate to architect's design.

TILE (Reinforced-Cement):

American Cement Tile Mfg. Co., Pittsburgh and New York. "Bonanza" roofing tile.

SAFETY TREADS

Am. Mason Safety Tread Co., Lowell, Mass.

SASH

(See Windows)

SASH CORD

Samson Cordage Works, 88 Broad St., Boston.

SHEET METAL

American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.

FORMED PRODUCTS:

American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Berger, The, Mfg. Co., Canton, Ohio.

METAL CEILINGS:

Berger, The, Mfg. Co., Canton, Ohio.
Canton Art Metal Co., Canton, Ohio.

ALPHABETICAL INDEX OF ADVERTISERS ON PAGE 34

STAINS

(See Paints, Varnishes and Stains)

STONE

GRANITE:

National Building Granite Quarries Association, Inc., 31 State St., Boston, Mass.

LIMESTONE:

Indiana Limestone Quarrymen's Association, Bedford and Bloomington, Ind. Furnished in three colors, "Buff Indiana Limestone," "Gray Indiana Limestone" and "Variegated Indiana Limestone." Can be had in blocks of practically any size. For churches, public buildings, residences, apartment houses, school buildings, office buildings, railroad terminals, statuary, gateways, garden furniture, etc. Indiana Limestone trim for industrial buildings. Stone columns.

STRUCTURAL STEEL

PRESSED STEEL CONSTRUCTION:

Berger, The, Mfg. Co., Canton, Ohio. "Metal Lumber." Pressed Steel Joists and structural members.

Truscon Steel Co., Dept. 68, Youngstown, Ohio. Representatives in principal cities. "Kahn" pressed steel beams, joists, studs, plates, etc.

STUCCO AND WALL BOARD

PLASTER BOARD:

Bishopric Mfg. Co., The, 744 Este Ave., Cincinnati, Ohio. Bishopric Stucco or Plastic Board. The dove-tailed key locks the plaster. Made of creosoted lath, asphaltmastic and heavy fibre board.

TERRA COTTA

TERRA COTTA (Architectural):

N. Y. Arch. Terra Cotta Co., Tel. Astoria 700.

TILE

(See Flooring and Roofing)

VARNISHES

(See Paints, Varnishes and Stains)

VENTILATION

(See Heating, Ventilation, Plumbing)

WALL BOARD

(See Stucco and Wall Board)

WATER AND DAMPPROOFING

Cabot, Samuel, Inc., 141 Milk St., Boston.

WATER SUPPLY SYSTEMS

Carter, R. B., Co., 152 Chambers St., N. Y. C.

WINDOWS METAL

Detroit Steel Products Company, Department No. 9, Detroit, Mich. Fenestra Solid Steel Windows are made from Solid Rolled Steel Bars interlocked by patented Fenestra joints. Ventilators are equipped with adjustable, removable butts. Fenestra Gravity Cam Latch automatically locks ventilators when closed. Patented Channel Section gives ventilators double weathering.

Pomeroy, S. H., Co., Inc., 30 E. 42d St., N. Y. Hollow metal fire retardant windows in 27 standard types.

Truscon Steel Co., Dept. 68, Youngstown, Ohio. Representatives in principal cities. "United" steel sash in all types; horizontally and vertically pivoted sash; counterbalanced and counterweighted sliding sash; center pivoted and top hung continuous sash; steel and glass partitions; sliding and swinging doors; casement sash of all designs.

CASEMENT:

(See Casement Windows)

WIRE GLASS

Mississippi Wire Glass Co., 216 5th Ave., N. Y. C. Polished Wire Glass—"Romanesque," "Syenite," "Maze," "Pentecor," "Ribbed," "Rough." Figured Wire Glass—"Apex," "Romanesque," "Syenite," "Maze," "Florentine," "Figure No. 2," "Ondoyant," "Pentecor," "Ribbed," "Rough."

WOOD

REDWOOD:

California Redwood Association, 721 Call Bldg., San Francisco, Cal.

MV MV MV MV MV MV MV MV MV MV MV

For the Duration of the War

Our entire output of Vanco Bronze and other Lighting Fixtures will be used for Industrial Housing and other Government Purposes

Mitchell Vance Co., Inc.

Sole Producers of Vanco Bronze, the New Metal

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The Diamond Trade Mark is your assurance of Genuine Jenkins Valves and your assurance of dependable valve service.

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STYLES FOR EVERY ROOM **SANITAS** MODERN WALL COVERING *WIPE OFF THE DIRT*

Made of cloth finished in durable oil colors that can't fade, crack or peel. Tinted, Decorative and Glazed styles for every room in the house. Booklet and samples on request.

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BERGER METAL BUILDING MATERIALS

See Digest of Manufacturers' Data in this magazine, also our display advertisements. Our catalog in Sweet's as follows:

Metal Lumber 244-250
Reinforcing Plates.....216-217
Corner Beads and Metal Lath.253
Cores and Expanded Metal...195
Steel Ceilings.....31
Sidewalk Lights.....834-837
Steel Lockers, Steel Bins, and Shelving and Steel Cabinets.....1703-05

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Branches Boston, New York, Philadelphia, Chicago, St. Louis, Minneapolis, San Francisco

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Are Smoke Consumers and Fuel Savers and have stood the test for 25 YEARS. They are imitated, NOT EQUALLED.

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(Formerly of Chicago) EASTON, PENN.

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Velvet White Enamel

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MISSISSIPPI WIRE GLASS

For protection against Fire and Breakage

Mississippi Wire Glass Co., 216-5 Ave., N. Y. C. Chicago St. Louis

"Southern Beauty" Enameled Ware

Manufactured by

THE CAHILL IRON WORKS

CHATTANOOGA, TENN.

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gives complete detailed information about
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We'll be glad to send you a copy.
Carrier Air Conditioning Co. of America, Buffalo, N.Y.

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Everything required to equip any building, and all of a uniformly high quality
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ARTESIAN WELLS
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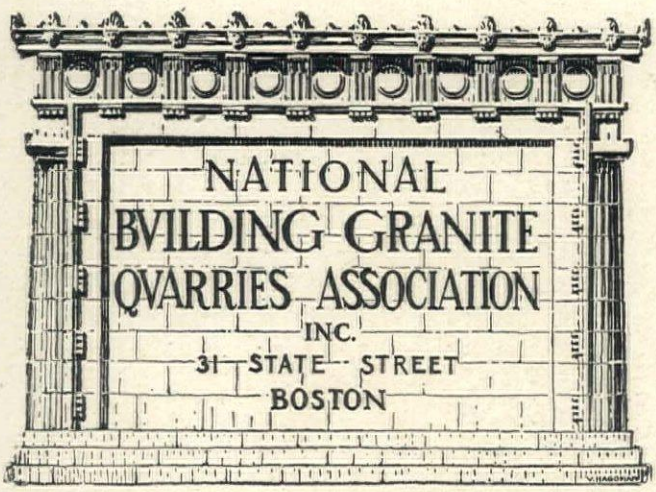
We are equipped to handle your water supply problems from inception to completion.
RALPH B. CARTER CO., 152 Chambers St. NEW YORK 2-1

Raymond Concrete Piles
Made in place with protecting steel shell which remains in the ground.
RAYMOND CONCRETE PILE COMPANY
NEW YORK: 140 Cedar Street CHICAGO: 111 W. Monroe Street

SAMSON SPOT SASH CORD

SAMSON CORDAGE WORKS, BOSTON, MASS.

COAL saving, money saving and warm homes in winter are **mighty important items** these days. Specify STANLEY STORM SASH HARDWARE.
The Stanley Works
New Britain, Conn., U. S. A.



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Fine Appearance
Rich Texture
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MEASURED drawings and photographs of examples of Colonial furniture, in portfolio, 10 x 14 inches. This collection of illustrations is particularly valuable to architects in making suggestions to clients in connection with Colonial work. The glossary and other text treat of this interesting subject in a comprehensive manner, and as a study of Colonial furniture it is complete in its treatment, containing photographs and measured drawings of the original Chippendale. The price of this collection is $3.00.
U. P. C. BOOK COMPANY, Inc. Successor to The American Architect Book Dept. 241-249 W. 39th ST., NEW YORK

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Positions Wanted, 75 cents for 25 words or less and 2 cents r each additional word; Help Wanted, Special Notices, Competitions, Proposals, etc., $1 for 25 words or less and 3 cents r each additional word. Ten lines or more 30 cents per line. opy received until 12 m. Friday. PAYMENTS STRICTLY IN DVANCE.

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RADUATE civil engineer, thoroughly proficient in structural design and construction, heating and ventilation and echanical equipment for buildings, working drawings, specifitions, estimates and contracts, good executive, desires workg interest with architectural firm, or general contractor, aving business enough to warrant the employment of an allround high-grade man. Address 53-A, care The American rchitect. (tf)

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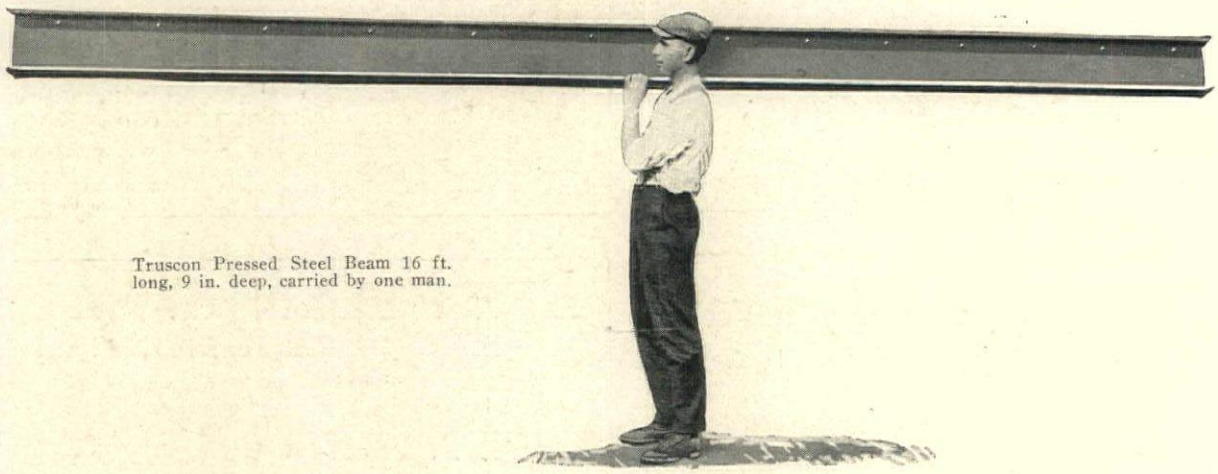
SPECIAL NOTICE

ESTIMATING, by Edward Nichols. Containing invaluable information for the use of Architects, Contractors, Builders and others interested in building. This handbook tells how to go about the task of making an estimate intelligently. 140 pages, 35 illustrations. Cloth binding. Price, $1.00. U. P. C. Book Company, Inc., successor to The American Architect Book Dept., 241-249 West 39th Street, New York.

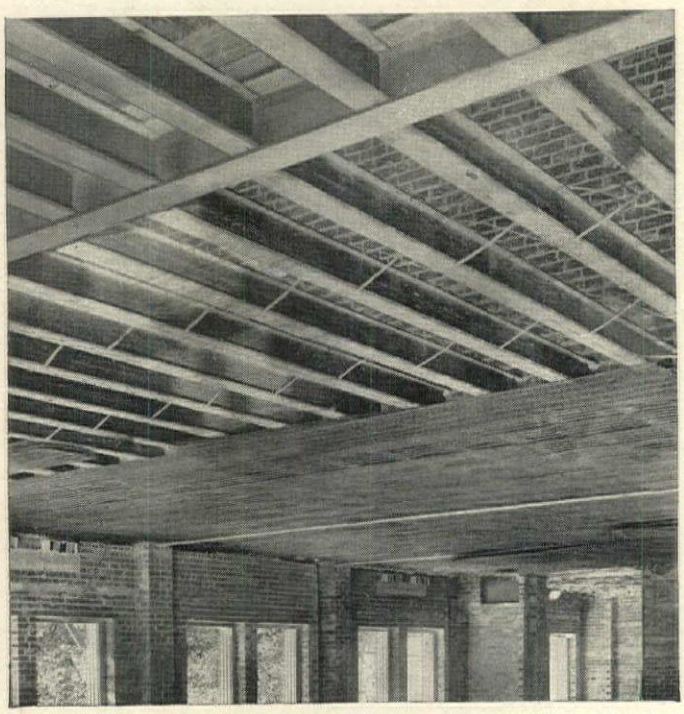


Truscon Pressed Steel Beam 16 ft. long, 9 in. deep, carried by one man.

One Man Instead of Many

Handles Truscon Pressed Steel Beams!

The light weight and simplicity of Truscon Pressed Steel saves labor and time in building. The joists and studs are shop-made and reach the building site ready for installing—no cutting, no fitting, no punching, no riveting. Labor is scarce—use the constructions that save man-power!



Pressed Steel in Nurses Home, St. Vincent's Hospital, Toledo, Ohio. Thos. F. Huber, Archt. H. J. Spieker Co., Contrs.

The minimum of materials are used with Truscon Pressed Steel. Place the joists, attach the Hy-Rib Metal Lath by bending down the steel prongs and apply a thin layer of concrete or plaster. No centering nor forms required, no masses of concrete to be handled and placed.

Fireproofness and permanence are combined with economy and light weight. Truscon Pressed Steel is the ideal construction for moderately-loaded buildings, such as schools, apartments, stores, hotels, factories, etc. Its light weight makes it particularly desirable for additional stories of old buildings.

Ask for our suggestions—send for free copy of Truscon Pressed Steel Catalog.

TRUSCON STEEL COMPANY
(FORMERLY TRUSSED CONCRETE STEEL CO.)
YOUNGSTOWN, OHIO.
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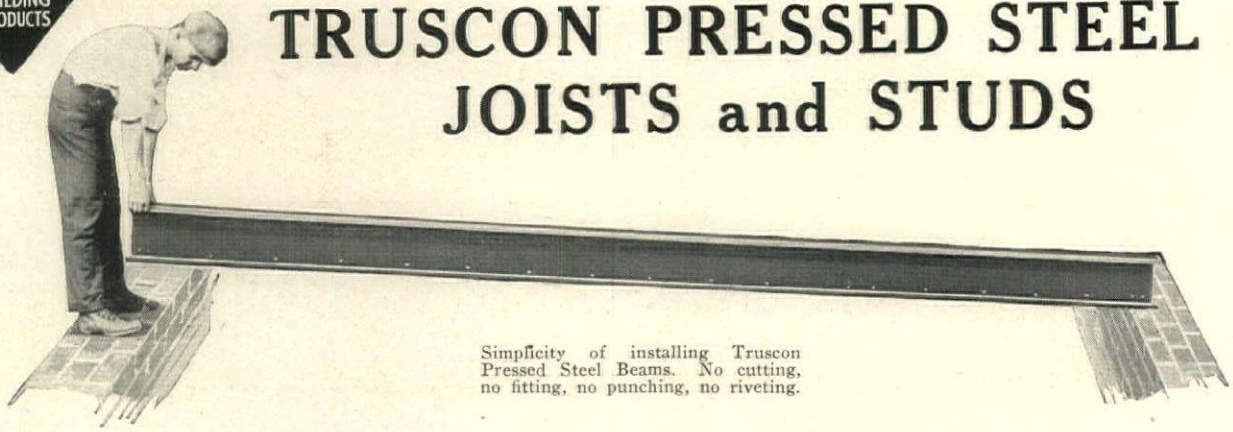
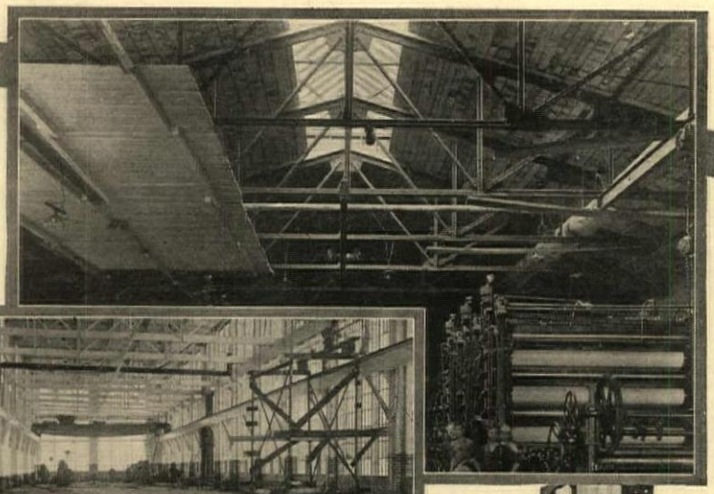
TRUSCON STEEL CO
TRUSCON
BUILDING PRODUCTS

TRUSCON PRESSED STEEL JOISTS and STUDS



Simplicity of installing Truscon Pressed Steel Beams. No cutting, no fitting, no punching, no riveting.



The non-conductivity of Redwood plank roof prevents spoilage of manufactured products from the dripping of condensed moisture from roof—even in Winter. Paper Mill of Parker-Young Company, Lincoln, N. H.

This balcony in the largest machine shop on the Pacific Coast, and its companion balcony are paved with 3-inch Redwood blocks. The main floor is paved with 6-inch Redwood blocks. 130,000 square feet altogether.

Industrial Supremacy

The many unusual qualities of California Redwood make it better adapted to a wide variety of industrial uses than any other lumber.

Because of its remarkable resistance to fire, Redwood is of utmost importance in all general construction, in industrial housing, factory and similar building. Redwood ranks first for cores of fire doors, fire shutters, fire walls and elevator shafts.

The natural rot resistance of Redwood (no artificial preservative required) makes it supreme where long life is a factor—for all exterior uses, mudsills, siding, sheathing, roofs.

Tanks, pipes and flumes made of Redwood resist the action of water, acids and alkalis; and since seasoned Redwood resists rot and does not warp, shrink or crack, leakage and repairs are reduced to a minimum.

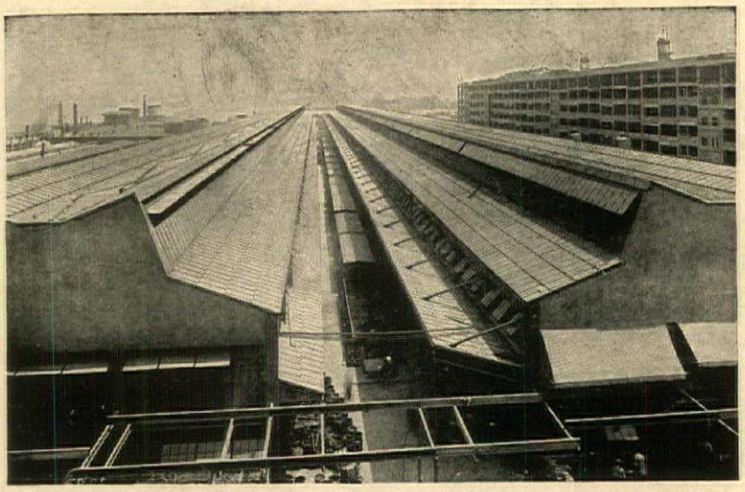
Redwood block paving costs less to lay, has longer life. Stands the heaviest traffic. No creosote or other preservative required. Resists wet and dry rot. Permanent in shape. Maintenance costs practically nothing.

Many other important uses of Redwood are explained in our free booklets, "Redwood for the Engineer," "Specialty Uses of Redwood" and "Redwood Block Paving and Flooring." Write for them and stained samples of Redwood today.

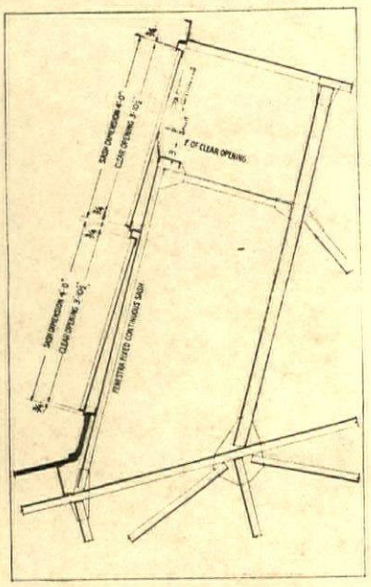
CALIFORNIA REDWOOD ASSOCIATION
721 Exposition Building, San Francisco, Cal.

California Redwood

Resists rot and fire

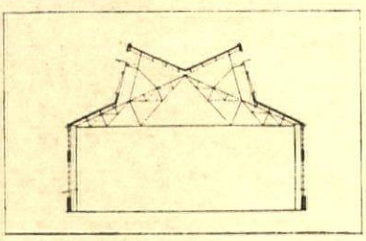


Upset buildings of the Ford Motor Company. Compare the wide openings for daylight and ventilation in the building at the left of the picture equipped with Fenestra Center Pivoted Sash with the opening secured by the use of top hung sash in the building at the right



Steel detail of Ford upset building at the left of the photograph. Fenestra center pivoted continuous sash and Fenestra fixed continuous sash are used.

The truss detail of this Ford upset building is shown in the small illustration below.



Thorough Daylighting and Ventilation Through Center Pivoted Sash

TWO methods of securing daylight and ventilation in the same type of building are here illustrated. The method used in the building at the left of the picture offers advantages which especially recommend it for this type of building.

The center pivoted steel sash used provides wide openings for daylight both above and below the sash. Any reduction of lighting by monitor sash getting "smoked up" is thus overcome.

Thorough ventilation is another center pivoted sash advantage. When sash is opened wide there is an absolutely free flow of air—the sash opening being in the exact direction of the air currents. Fumes and gases find an easy straight up and out exit. No sharp bends to reduce the speed of flow.

Balanced construction also takes part of the load off of the operating device and makes the sash easy to open.

The new Fenestra Monitor catalog contains many helpful suggestions on daylighting and ventilation. A copy will be sent on request.

DETROIT STEEL PRODUCTS COMPANY
4109 East Grand Blvd. Detroit, Michigan

Fenestra
SOLID STEEL WINDOWS