

The AMERICAN ARCHITECT

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PUBLISHED WEDNESDAYS IN NEW YORK—FOUNDED 1876
VOLUME CXVI JULY 9, 1919 NUMBER 2272

Entered as second class matter January 6, 1909, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Publication office, 243 West Thirty-ninth Street, New York, N. Y. Subscription price in the United States and Possessions, \$10.

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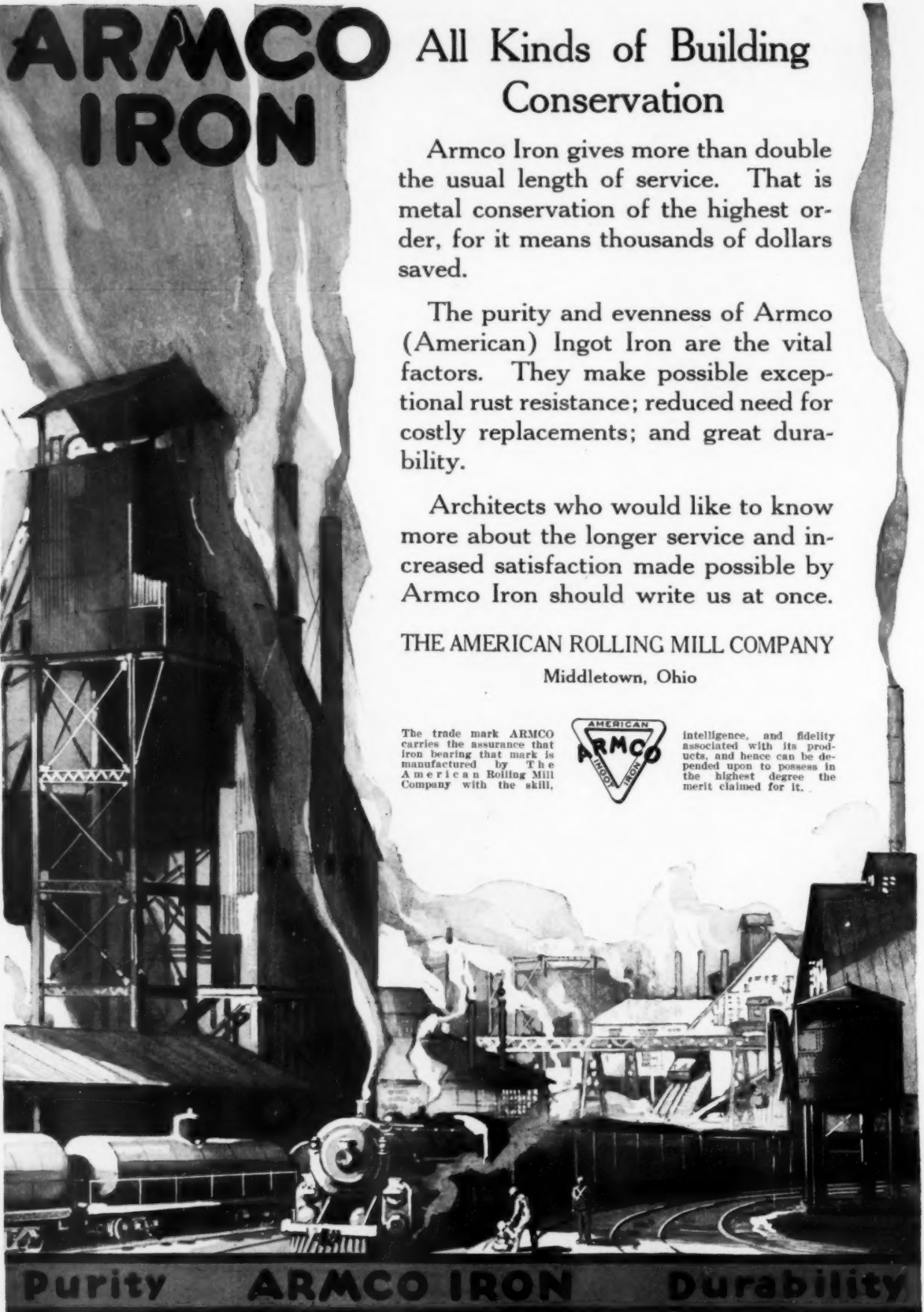
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THE AMERICAN ARCHITECT

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VOL. CXVI

WEDNESDAY, JULY 9, 1919

NUMBER 2272



BROAD STREET FRONT

The Union Passenger Station, Richmond, Va.

JOHN RUSSELL POPE, *Architect*

JUST to illustrate, let us suppose that we are sitting in an architect's office some particularly busy morning when he is opening an unusually large mail.

The Cold Storage Company advises him of the acceptance of his plans for a large refrigerator plant. Mr. Newlyrich has pleasure in informing Mr. John Jones, architect, that his plans for their half million dollar country house have been approved by Mrs. Newlyrich, and he will please go ahead. The building committee of St. John's Church re-

ports that the plans as submitted are satisfactory and urges immediate action. Then the Railroad Company wants certain minor modifications of the plans submitted and the earliest possible letting of the contract. A cold storage plant, a country house, a church and an enormous railway station. Just a minute, please. Here comes the secretary with a telegram stating that plans for a certain new theater are also approved.

A rather wide range of buildings requiring a wide range of knowledge. But nothing unusual

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DETAIL OF ENTRANCE TO DINING ROOM



DETAIL OF SIDE EXTERIOR DOORWAY

UNION PASSENGER STATION, RICHMOND, VA.

JOHN RUSSELL POPE, ARCHITECT

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VIEW FROM CONCOURSE LOOKING TOWARD WAITING ROOM

to the architect in large practice. To each problem he will bring the most intensive thought, the utmost of technical knowledge all crowned by the highest artistic expression of which he is capable. Such things as these, not so unusual as the lay mind may believe they are, sum up the professional activity of architects.

Referring specifically to the Richmond Station, illustrated in this issue, every competent critic will concede its artistic excellence. Then, referring back to other large and important buildings that have come from this same architectural office, we have the most perfect types of country houses, a building like the Scottish Rite Temple in Washington, and scores of different structures, all so architecturally good, so admirably planned, that the

Architectural League of New York and the New York Chapter of the American Institute of Architects have, in recognition of talent so versatile and so well directed, conferred their annual medals.

While it may be possible successfully to plan a complicated structure of this sort, availing of all the help and suggestions that technical bodies, specially trained and fitted to this particular branch of railroad administration may offer, and while it may be relatively easy to impart good design to any building, the art of the thing is the coupling up of every well conceived feature in a building so pronouncedly utilitarian with the highest expression of architectural art. Therein lies the true artistic aspect of architecture, therein stands forth the work of the master craftsman.

The Union Station of Richmond, Va., is so fully illustrated in this issue that the architectural reader will not need to be led in his appreciation of its good points.

There are, however, certain things not so evident in the illustrations to which it will be worth while to direct attention.

Some may ask, why a dome over a railway station? And the answer may be, why not? Does not the dome clearly indicate just what it covers? Is it not symmetrically and well placed as to the mass? Does it indicate any other than the purpose for which it is placed, and is it not evidence of the force of the designer of this building in that he has departed from precedent and, in the vernacular, "got away with it"?

Under this dome is the wide concourse of the white waiting room which is flanked on one hand by the colored waiting room and on the other by the lunch room. Each of these subdivisions has



MAIN WAITING ROOM
UNION PASSENGER STATION, RICHMOND, VA.
JOHN RUSSELL POPE, ARCHITECT

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its easily communicable dependent rooms and accessories, all planned as to their respective areas to afford quick and efficient service, especially at those times when traffic is abnormally large.

The information desk is placed in this plan with particular reference to the lanes of movement of the intending passenger and not at a point distantly removed from the ticket offices as is so often the case. The wide concourse and vestibule leads straight through the central axis of the plan. One sees upon passing through this concourse how perfectly the dome lends itself to the economy of the entire plan, and how thoroughly logical is its introduction when once the plans of all the floors have been studied and carefully analyzed.

The second and third floors are planned to provide ample accommodation for the large executive force of the railway, while on the fourth there is arranged the Railroad Men's Club on the one side and a large, at present unfinished, space to provide for the future growth of executive departments.

In the interior of the domed waiting room the color is grey with walls of a plain ashlar of limestone with a Napoleon grey marble wainscoting extending to a height of ten feet. The domed ceiling has a plaster surface above four large stone arches, with four pendentives over the corner piers. The structure of the dome is steel.

The transition in scale from the Doric order of the exterior to the Ionic order of the interior has been skilfully accomplished. The floors of the concourse are of terrazzo with marble slab borders, while the doors and interior metal work are painted a grey green. The color scheme has been well worked out.

An interesting feature of the interior is the suspended globe that hangs from the dome and upon which is traced the outline of the continents. This globe is eight feet in diameter and hangs suspended within a double horizontal ring of bronze ornamented with the signs of the zodiac. Suspended in such a way that the supporting chains are not visible, this ornamental feature appears to float in space.

The lateral concourse is a long room extending out over the existing tracks of the loop system. It is approximately 250 feet long and 54 feet wide and is finished on the inside with plaster walls and a wainscoting of grey Tennessee marble. Access to the outgoing tracks is reached by enclosed



THE CONCOURSE



DOORWAY DETAIL IN MAIN WAITING ROOM
UNION PASSENGER STATION, RICHMOND, VA.
JOHN RUSSELL POPE, ARCHITECT

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stairways on the east side of the concourse, while the incoming traveler reaches the concourse by ramps which approach the concourse level from the west. Each train platform serves two tracks of 25 feet wide and covered with canopies extending a short distance over the concourse to enable passengers to enter and leave without exposure to the weather. These canopies are supported by cast iron Ionic columns.

The station baggage is all handled on the basement floor in the east wing of the building and

that there is included a building for express material, heating plant, two electro-pneumatic plants from which the train movements of the whole terminal station are controlled, a supply house, oil house and ice house. The express building has been placed across the tracks from the station and is built of light colored brick. It is served by one short track and one through track. The platform between the two tracks is 12 feet wide and 350 feet long, giving unusual space for the handling of express material.



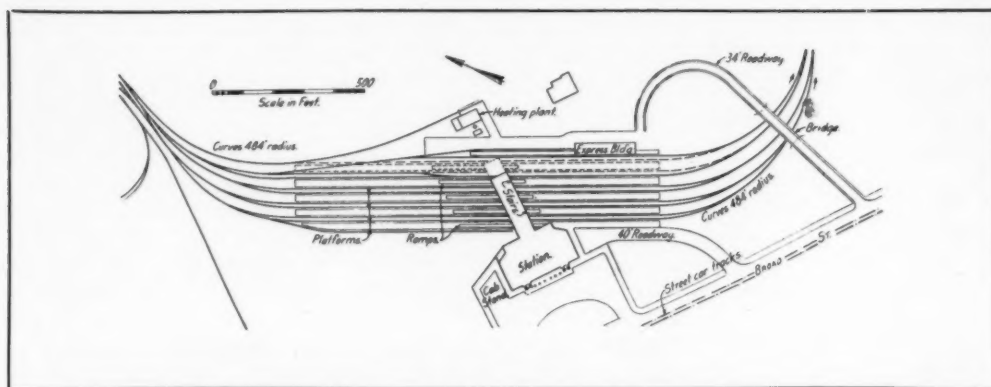
VIEW SHOWING STAIRS TO THE TRAIN PLATFORMS

on a level with the tracks. From this basement there is a separate service drive which is connected with the baggage and checking service on the waiting floor by a chute and elevator. Space is also provided in the basement for the Federal mail service, a recreation room for trainmen and conductors and the offices of the station master. The various other subdivisions of the basement may be studied by reference to the plans.

In studying the general layout it will be noted

With reference to the exterior design and general aspect of the building, but casual reference is needed to supplement the illustrations that are presented. The building has a frontage of 240 feet and is 118 feet deep. The material used on the exterior is American limestone. The east and west wings are each three stories high on the exterior, and on the interior court each wing has an additional story, all of which, above the ground story, is used for railroad business.

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TRACK LAY-OUT, UNION PASSENGER STATION, RICHMOND, VA.

As will be noticed, the only ornamentation is that to be found about the large clock over the entrance, and the Roman panel reliefs on either side of the second story windows of the end pavilions of the portico.

The allegorical figures in low relief that support the clock represent Progress and Industry, and are by the sculptor, Ulysses Ricci, while the carved seals in the adjoining panel are those of the United States and Virginia.

French Reconstruction Discussed by George B. Ford

WHAT France is doing in the way of reconstruction work has been summarized by Major George B. Ford of New York, who left for France early in 1916 as a member of the original group of the American Industrial Commission and who later was made Director of the Bureau of Reconstruction and Relief of the Red Cross.

This reconstruction work, or reconstitution work, as the French call it, falls into three distinct divisions: the agricultural reconstitution, providing for the peasants and farmers of the devastated areas; the industrial reconstitution, providing for the workers in the mills and factories of the war-ridden regions, and the village, town and city planning work, providing for the housing of all of the repatriated French. The channels through which this stupendous task is being accomplished are three: The French Government, the French organizations functioning through the individual efforts of the Frenchmen, and the various relief associations supported in the main by Americans.

Before going into the details of the French reconstitution work it is necessary to have a more or less clear idea of the conditions it must remedy. Major Ford shows how complete was the destruction wrought by the Germans. By his account the

devastated area of France covers approximately six thousand square miles; in all about 2 per cent of France, with a total population of 2,000,000 people. This is about equal to the area of Connecticut, Rhode Island, and part of Massachusetts. Something like 450,000 buildings have been damaged. Of these 200,000 are completely destroyed. According to the estimates of the Government engineers, the value of the buildings totally destroyed alone is \$5,000,000,000. This does not include Government and administration buildings. The loss of public works has been estimated at \$4,000,000,000.

The devastation of farm areas and field implements is figured at \$2,000,000,000. The invaded regions of France constitute the richest agricultural soil in Europe. They form about 15 per cent of the tillable area of France, and their crops average about 10 per cent of the agricultural production of the country. The war rendered 3,000,000 acres useless for cultivation. The capital invested in the 250,000 farms which were situated in this region is reckoned at \$400,000,000. That is the figure given for the pre-war period. Today, were they untouched, they would be worth at least twice as much.

To recultivate what land will lend itself to recul-

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tivation will necessitate the buying of a vast number of farm implements which the Germans either destroyed or packed off to their own country.

There are, besides, innumerable farm animals to be stocked up. Of cattle alone 900,000 were carried off into Germany.

The industrial situation is equally appalling. The machinery that was destroyed and carried away will have to be replaced before France can enter the competitive market and take her place as a power among the nations. The industries suffering most were those connected with steel and iron production. Before the war the total production of iron ore in France was about twenty-two million tons, of which over half came from the Briey and Longwy basins in the departments of the Meurthe and Moselle. These departments were in the hands of the Germans during the war. Seventy per cent of the coal supply of France came from the Valenciennes basin. This, too, is in the invaded district.

The textile industry of France boasted of some 7,500,000 cotton spindles, of which 4,500,000 were in the region invaded by Germany. All of these were either destroyed or carried back into Germany. Out of a total of 550,000 linen spindles in factories in the devastated regions, 500,000 were either destroyed or removed.

France before the war had a total of 210 sugar refineries. One hundred and forty of these were operating in the invaded territory. The machinery in all of these was either totally destroyed or removed. The same is true of the electric power companies. Machine shops and foundries suffered a loss of \$160,000,000 in machinery alone.

The forest land that has been destroyed by the Germans is estimated at 1,000,000 acres, which means that France has been deprived of 10 per cent of her lumber supply and $6\frac{1}{2}$ per cent of her firewood.

Altogether the total damage in the North of France, including buildings, agriculture, industry, furniture and public works, is estimated at about \$15,000,000,000.

Perhaps, however, the damage to the soil of France has been the most cruel of all. A trip through the recent battlefields shows mile after mile of land churned up by shell holes, full of dugouts, and criss-crossed with a network of trenches. The top soil is almost entirely gone, leaving nothing but a chalky, sandy substance, which is not fit for the growing of crops. The only thing that can be done here, and there are 250,000 acres of land in this condition, is the planting of forests, with the expectation that half a century or a century from now the leaf mold will

create a new top soil. The Service of Reconstruction of the Soil, one of the numerous reconstruction committees, has a map in its office showing just exactly the situation of the areas that are utterly hopeless.

The housing problem is being met almost entirely on a co-operative basis. The co-operative housing reconstruction societies started in a small way during the Summer of 1917, south of Châlons-sur-Marne and west of Vitry-le-François. Their work, however, was completely destroyed during the second battle of the Marne.

The principle of these organizations is very much the same as that of the agricultural and industrial co-operative plans. The first arrangement the Government made for the making of advances on indemnities on war-devastated buildings was 50 per cent on the appraised value on a basis of pre-war prices. This was later raised to 75 per cent for individuals and 90 per cent for the co-operative groups. The added 15 per cent was a considerable inducement to the formation of these organizations.

The co-operative group treats with a single architect, engineer and contractor. As a result, doors, windows, mangers and farm buildings are being standardized.

The usual procedure under which the constructional co-operatives work is to build first the "grange", or the large storehouse for the village. This is used as a pivotal building from which all future buildings and the life of the village radiate. It is so constructed as to allow for storage of grain, temporary living quarters for those who need them, and shelter for animals. The men in charge of the execution of the work see to it that the cost does not exceed the eventual war indemnity. The bills are paid by the Executive Committee elected by the co-operative group, the Government making cash advances on them up to 90 per cent of the indemnity.

Where the tendency of a village or town is against co-operation, the Government is replacing destroyed buildings by supplying barracks and standard farm buildings to individual families. These farm barracks consist of two rooms and a shed. The cost of one of them is about \$900. This apparent extortionate price is due to the serious wood shortage in France. Wood that cost from 50 to 80 francs a cubic meter before the war now sells at 500 to 600 francs. Both the American and the British armies during the war cut off a large quantity of wood for their own use. It is planned to return this wood. The deliveries, however, cannot be accomplished fast enough to cover the present emergency on account of lack of proper transportation facilities. Large orders

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for wood have been placed in Sweden and Norway, and France undoubtedly will be able to get a great deal more from Germany and Austria.

A more extensive housing plan has been prepared for the larger cities. A bill definitely bearing on this problem has just been passed by the Senate of France. This provides that every city and town of 20,000 inhabitants must submit plans and specifications for replanning and extension within three years after the signing of the law, and furthermore, that within three months after its signature plans must be drawn up for improving all the devastated areas. The cost of these plans is to be paid by the State.

Already several cities have taken active steps to put this law into execution. The town of Lille during the war, and even during the period of German occupation, was busily engaged in collecting data for an eventual plan of rebuilding. Architects and engineers have been making city plans for Rheims for the past three years.

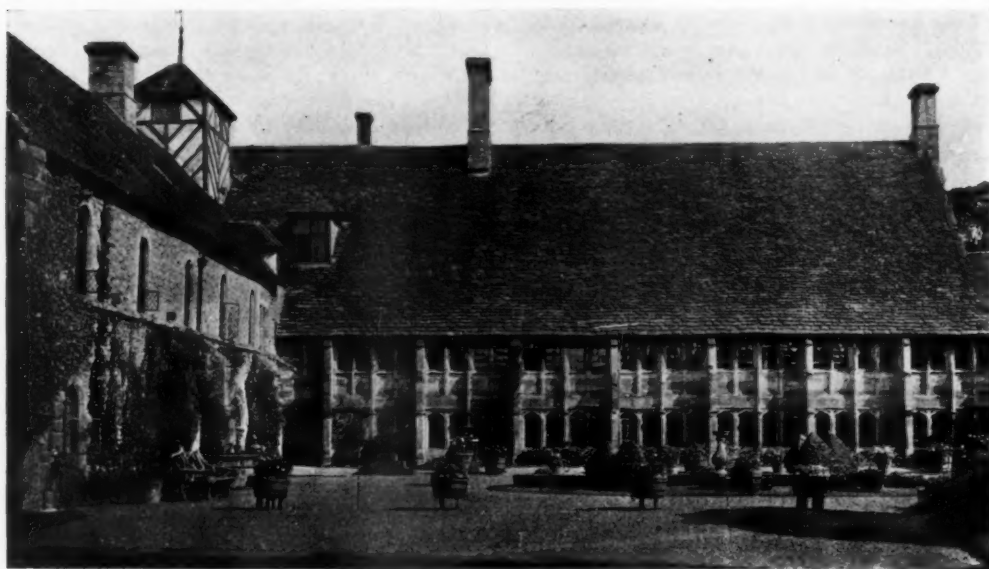
During the Fall of 1917 the architects and agricultural engineers working with the Government held a competitive exhibition of improved plans for farm building. There were four different groups of plans embracing the need of the regional customs and habits of the four sections of the devastated regions.

To secure the best results of this housing program, the architectural societies of France have or-

ganized themselves into a federation known as the National Federation of Societies of Architects, and have offered their services to the Government.

The American Red Cross Bureau of Research for Refugee and Reconstruction Problems, in line with this work, has organized a committee from the foremost French agricultural engineers, architects and contractors, established a drafting room, and has worked out a series of studies for putting up buildings that are within the reach of the people for whom they are intended. This committee is today working on plans for better agricultural methods, farming layouts, dwellings and sanitation.

The federation of architects, engineers, and contractors has induced the Government to give it a credit of 1,000,000 francs for the purpose of creating stocks of materials in the different main centers of the devastated districts. This credit is charged against the various Government services engaged in the reconstruction work. It has also asked the Government to vote an additional credit of 2,000,000 francs to be used as a subsidy for the contractors to help them start things going. A permanent bureau has been formed called the Office of Batiment, or Building Bureau. The Executive Committee of this bureau is made up of the Presidents of the leading architectural and engineering societies, who have organized with the purpose of securing better methods for handling construction plans and materials.



THE PRIOR'S HOUSE, MUCH WENLOCK

Editorial Comment

The High Bridge on the Harlem River

THE State Engineer, the State Superintendent of Public Works and the Dock Commissioner of New York, according to recently published interviews, are of the opinion that High Bridge, on the Harlem River, is a menace to navigation, and a strong retardant to the river's development as a waterway. It therefore seems highly probable that this dignified structure, which for more than half a century has spanned the Harlem, will soon be but a memory.

This is an instance where the aesthetic view must give way to the purely practical. The development of Harlem River, the name of the stream that flows with the tides between the East River and the Hudson, has now become absolutely necessary to the city's unrestricted northward growth. As the northern boundary of Manhattan Island, it was at one time a beautifully picturesque stream. Its wooded banks were the locations of many dignified country places, among them the Jumel Mansion, whose white porticoes were a prominent feature of the landscape.

So closely wooded were the banks of the Harlem that they suggested the names for a fleet of steamboats which plied between Harlem and Peck Slip and on which the business man who was not hurried made his daily trips to town. These boats were called the Sylvan Stream, the Sylvan Shore, the Sylvan Glenn and the Sylvan Dell, names suggested by this picturesque river.

High Bridge was built in 1840 as part of the Croton Aqueduct system. Its engineering and artistic excellence were at the time of its completion loudly acclaimed, and New Yorkers vied with each other for the honor of being one of the first official party to cross it, as in the case of walking across the bottom of the Croton Reservoir in Central Park before the ceremony of turning on the water. This reservoir is now about to be abandoned and converted into a sunken garden. The lower or "downtown" reservoir stood on the site of the present Public Library on Fifth Avenue from 40th to 42d Streets.

The last important landmark on Manhattan Island of the Croton Water System is now High Bridge. Its narrow arches that spring high into the air, rest on piers so closely spaced that larger craft cannot thread the eyes of these needles, and smaller ones are menaced by the swiftly moving

tides. So picturesque old High Bridge must pass, a passing that every New Yorker will view with profound regret. And in the passing, his mind will go back to a period more than a quarter century ago, when but a short half mile to the south there was the quaint old white wooden McCombs Dam Bridge, facetiously and profanely known as "the Dam bridge."

Headed westward on the Harlem, any one of the many groups of pleasure seekers who in row-boats thronged the water, might see the glistening white lines of the "Dam Bridge," with its central draw suggesting the draw-way of a castle moat, sharply silhouetted against the towering grey mass of stone that formed High Bridge.

We have achieved picturesqueness and progress in the lower end of Manhattan Island where the towering bulk of our office buildings strike awe and wonder to the minds of every foreign beholder, so let us hope that if we raze the High Bridge, and develop the Harlem River as a principal waterway, it may be done with equal picturesqueness.

Immigration and the Labor Shortage

WHEN it becomes known to what extent the United States is dependent upon immigration for its labor supply, a simple calculation will show that an acute labor shortage is soon not unlikely.

Demobilization of soldiers and sailors in enormous numbers, and the tendency of many of them to linger and seek employment in the large cities where they were discharged, naturally created an abnormal surplus in certain localities. These conditions were mistakenly believed to be a positive sign of large numbers of unemployed and a surplusage of labor. But conditions have quickly become adjusted, and there are now positive indications of a very pronounced shortage of labor.

During the period of the war, there was a noticeable stoppage of immigration. Since the armistice was signed, the number of immigrants reaching this country was comparatively negligible, and these are probably no greater in number than the many who are now returning to their native countries.

All Europe needs labor, and wages there will for some time be higher than ever before. For the seven years preceding 1915, immigration into the United States averaged one million a year. In the

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period since then, the average has not exceeded 150,000 a year.

There is here apparent a shortage in our normal increase in population from immigration at the present time of approximately 6,000,000. It is therefore evident that as soon as we have restored normal pre-war conditions, the shortage of labor will be conspicuous.

Industrial Training a Cure for Bolshevism

UNDOUBTEDLY we shall hear less of Bolshevism, the waving of the red flag, and social unrest when we have more largely effected a nation-wide system of industrial training. Dr. Watts was entirely right when he wrote that "Satan finds some mischief for idle hands to do," and it is in the great fields of industrial employment that we shall reach the solution of many things that now vex us and make us uneasy as to the future. As an antidote for Bolshevism, there can be nothing more efficacious than industrial training of the highest order.

Charles T. Clayton, director of the United States Training Service of the Department of Labor, in commenting on the necessity for the development of better industrial training, makes a distinction between wholesome discontent and unwholesome unrest. He states, "a man with a wholesome ambition will welcome training because it affords him an opportunity to gratify his ambition to earn more, to become skillful and to broaden his field of knowledge."

He traces all evil agitation and propaganda directly to those unfortunate victims of our present industrial system who have never been provided with opportunity thoroughly to learn any particular task.

It is undoubtedly true that a large proportion of the expensive labor turn-over is due to the fact that men are so poorly trained in the things they do. Many large employers of labor realize that it is not possible to hold on the job for long periods, certain classes whose unrest causes them to leave their work for no other reason than that they find nothing but monotony in long continued employment, but where better trained men would remain in the hope of steady employment and better wages in the future.

It is of course futile to hope that this large item of labor turn-over can ever be wiped out, but it is reasonable to expect that with better industrial training it can be measurably reduced. And, with labor contented, the Bolshevist, the labor agitator and similar undesirable elements will find it difficult to arouse sentiment in favor of their pernicious

propaganda sufficient in any way to affect our industrial progress.

Drafting Capital Away from Building Needs

REVENUE law amendments are commendable, says the *New York Sun*, when they eliminate petty and vexatious taxes. The present movement in Congress to replace the eliminated excise rates with very much higher income taxes and inheritance taxes, would seem seriously to menace the enterprise, expansion and velocity of the country's industry and business.

One needs no mind trained in the intricacies of high finance to realize that if the government by excessive taxation absorbs the surplus earning of individuals and corporations, there will be a general retardance in every form of legitimate business expansion. In fact methods of taxation thus far carried forward have been the real cause for stagnation in the building field, and not the high prices of material and labor that at present obtain.

If through excessive taxation, the individual and the industrial corporation find themselves so short of ready money as to be compelled to seek the help of their banks whenever they need the money to repair the normal depreciation of buildings, it is evident that we shall wait for some time to come for that period of stabilization which is so much to be desired.

Referring to present conditions as created by injudicious taxation, the *Sun* states:

At this very moment there is a striking example, coming home to hundreds of thousands of American people, of what discomfort and hardship can be caused by the shovelling of pretty much all surplus earnings, surplus profits, surplus capital, into the national treasury. We refer to the country's actual destitution of houses for our people to live in.

Hundreds and hundreds of millions of dollars are needed to put roofs over the heads of families clamoring here, there and everywhere for the shelter of homes. But the savings banks, always an important factor in building operations, cannot now provide the capital. The insurance companies cannot provide it. The trust estates, the large personal and family fortunes, which generally go into real estate investments, cannot provide it. The surplus funds that otherwise would have been building tens of thousands of houses and apartments were translated from that normal investment into the United States Treasury and thereafter devoured by war. Wherefore no house building then or now; insufficient dwelling places in the present and in the future.

It is evident that further methods of taxation that will create a scarcity of ready money will so greatly affect every branch of the building industry as to postpone indefinitely operations totalling into the billions that are now only waiting for available money with which to proceed and are not alarmed by the slogan of high prices which has been so insistently sent out from official quarters.

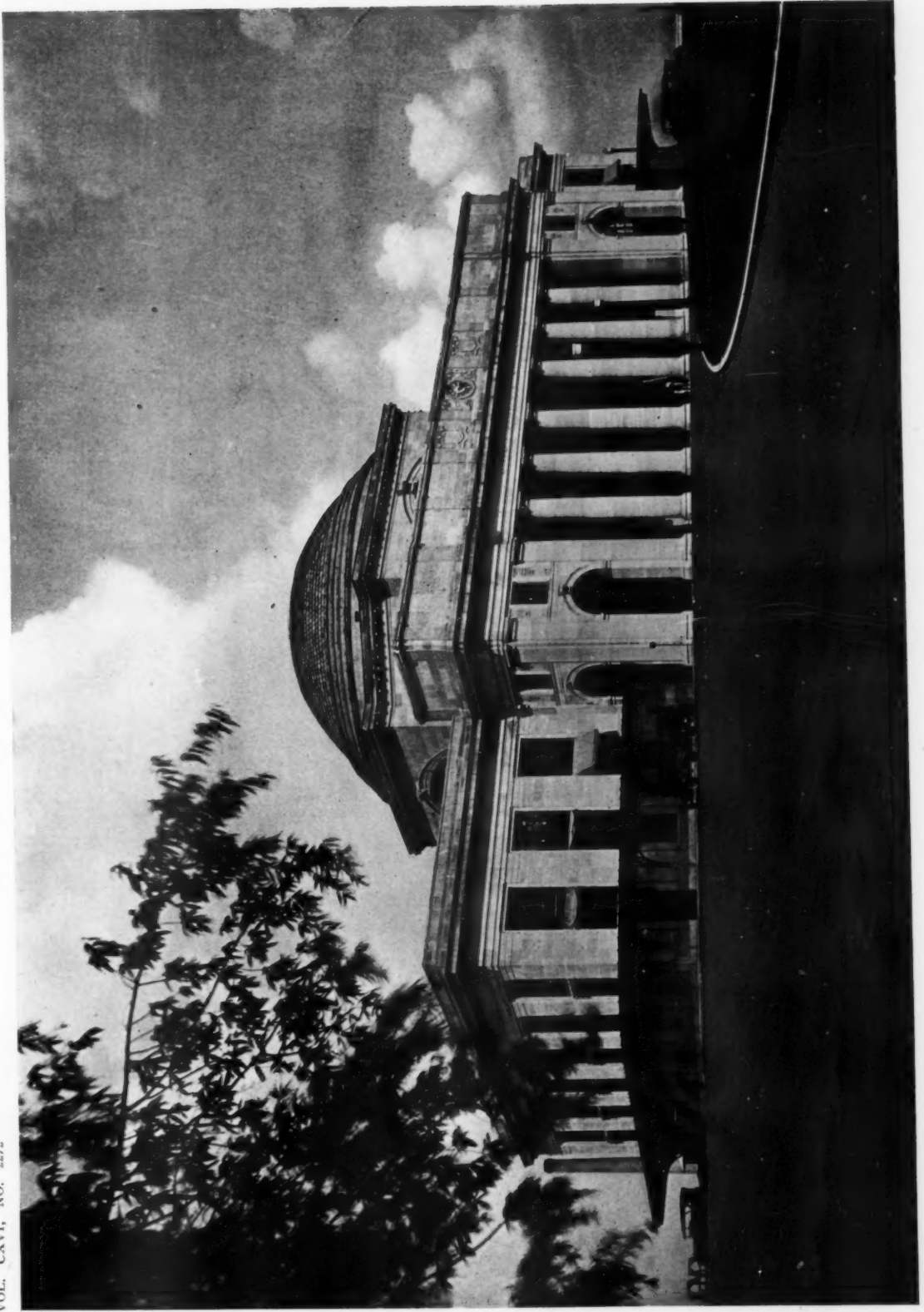


PLATE 10

UNION PASSENGER STATION, RICHMOND, VA.

JOHN RUSSELL POPE, ARCHITECT



PLATE 11

CENTRAL ENTRANCE PORTICO
UNION PASSENGER STATION, RICHMOND, VA.
JOHN RUSSELL POPE, ARCHITECT

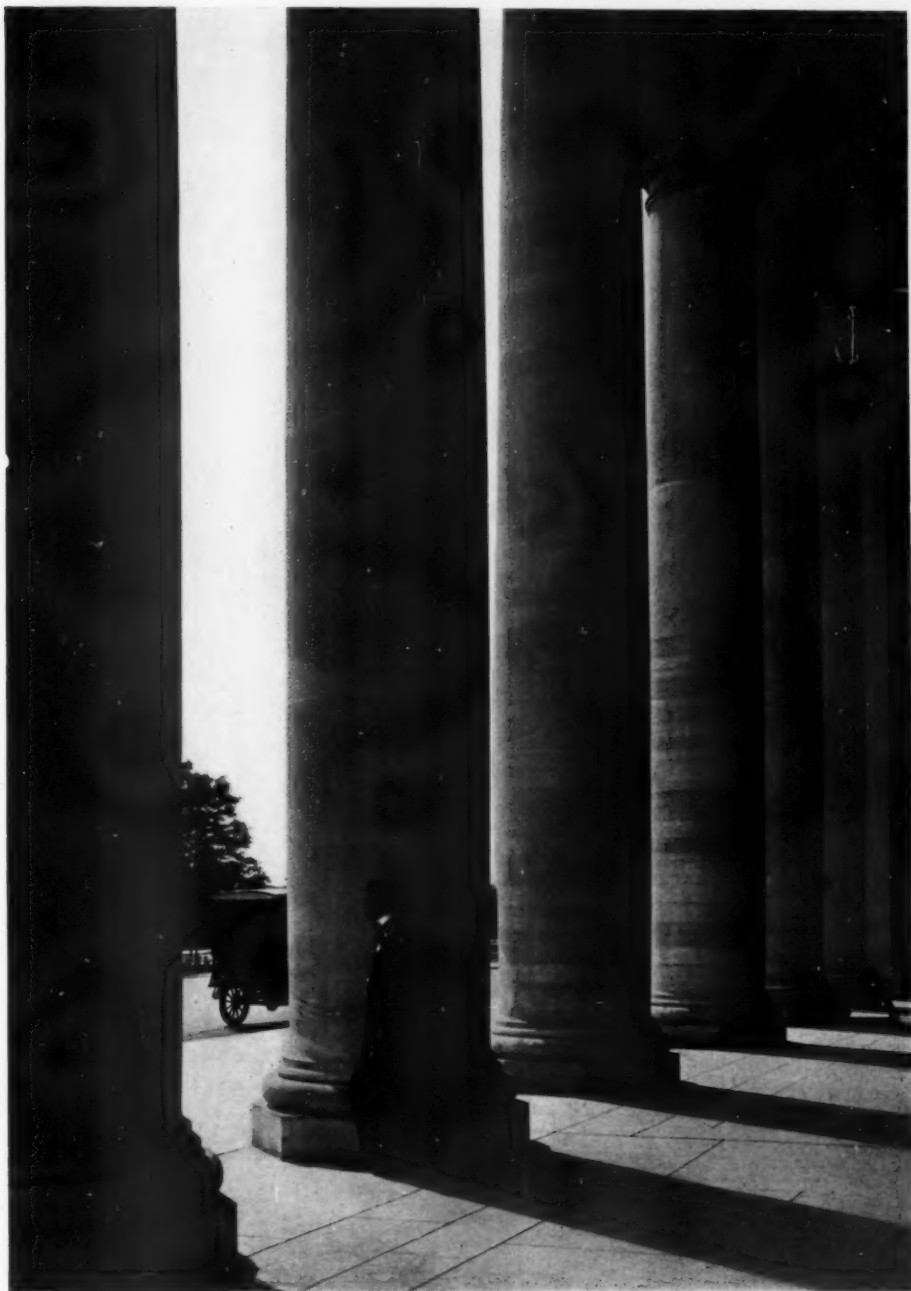


PLATE 12

THE COLONNADE

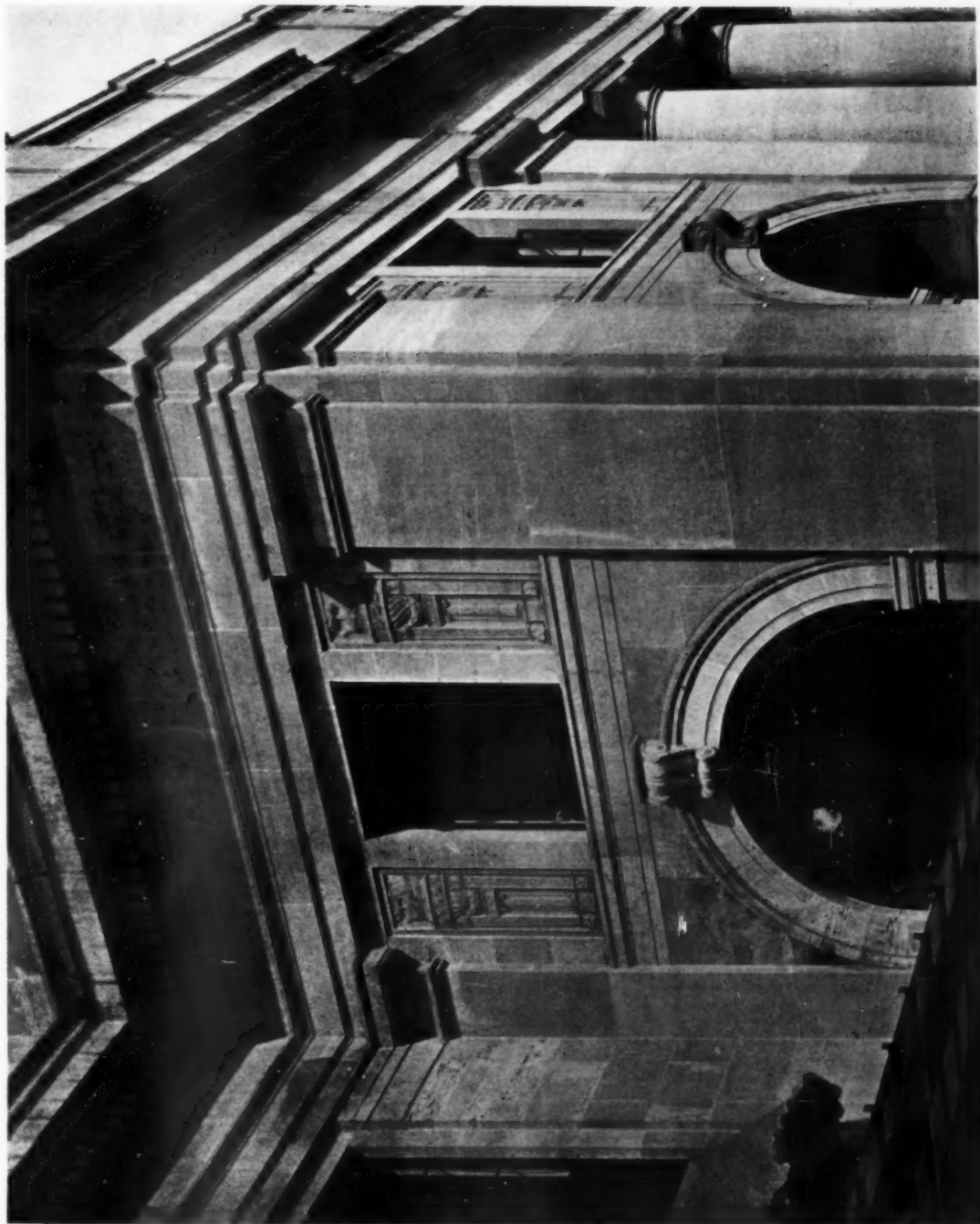
UNION PASSENGER STATION, RICHMOND, VA.

JOHN RUSSELL POPE, ARCHITECT



PLATE 13

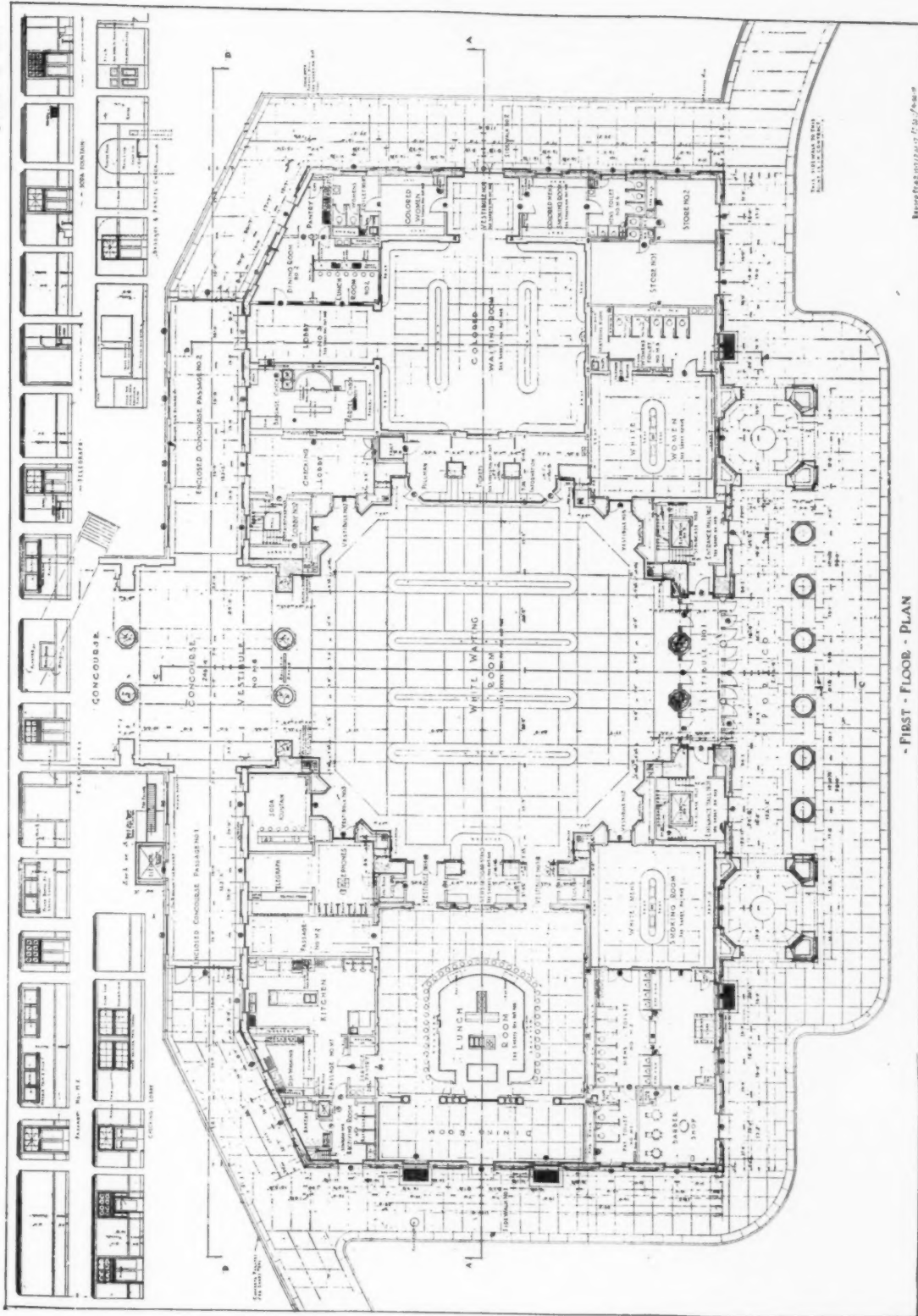
LOOKING ACROSS THE PORTICO
UNION PASSENGER STATION, RICHMOND, VA.
JOHN RUSSELL POPE, ARCHITECT



DETAIL OF PORTICO-END PAVILION

UNION PASSENGER STATION, RICHMOND, VA.

JOHN RUSSELL POPE, ARCHITECT



- FIRST - FLOOR - PLAN

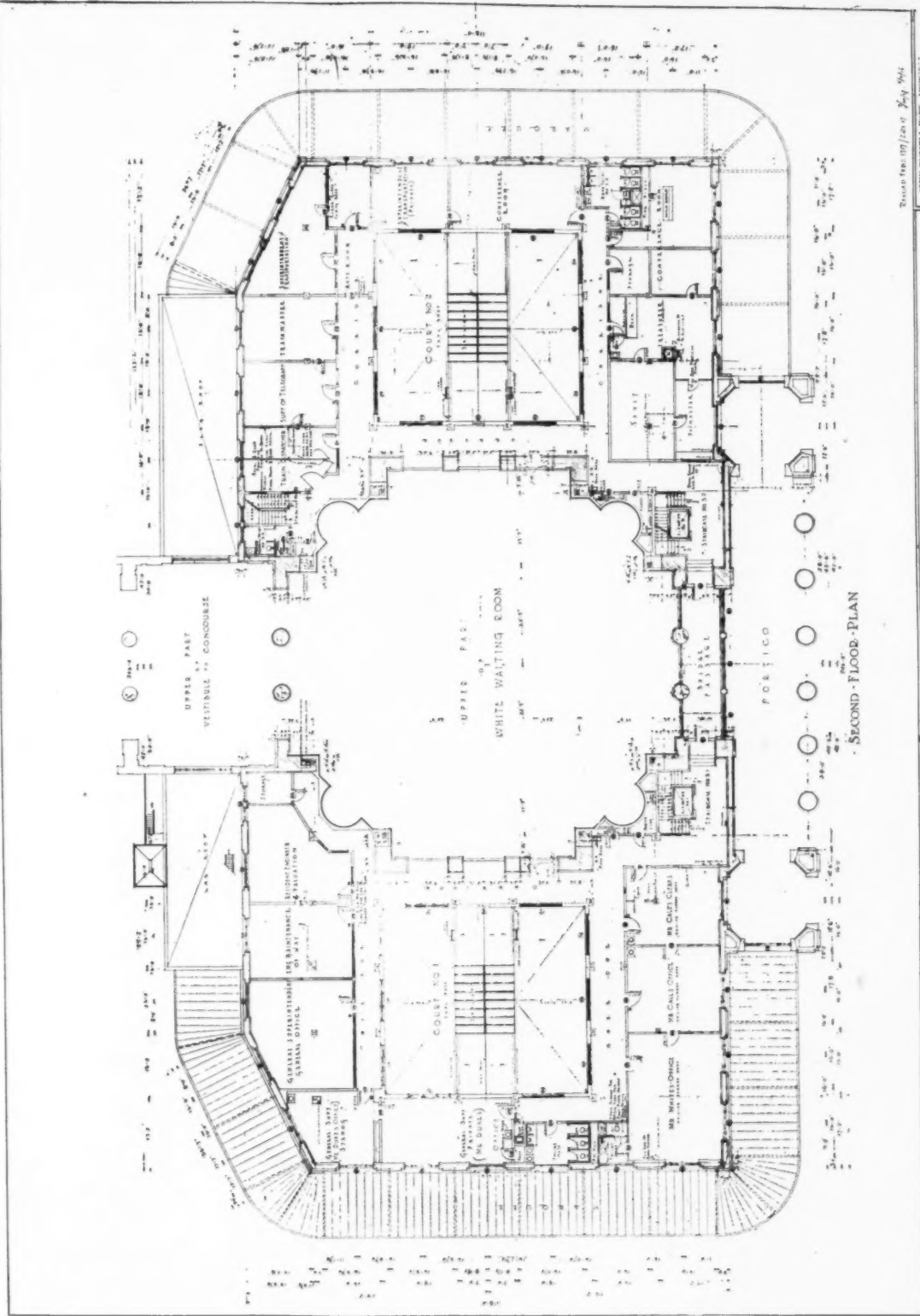


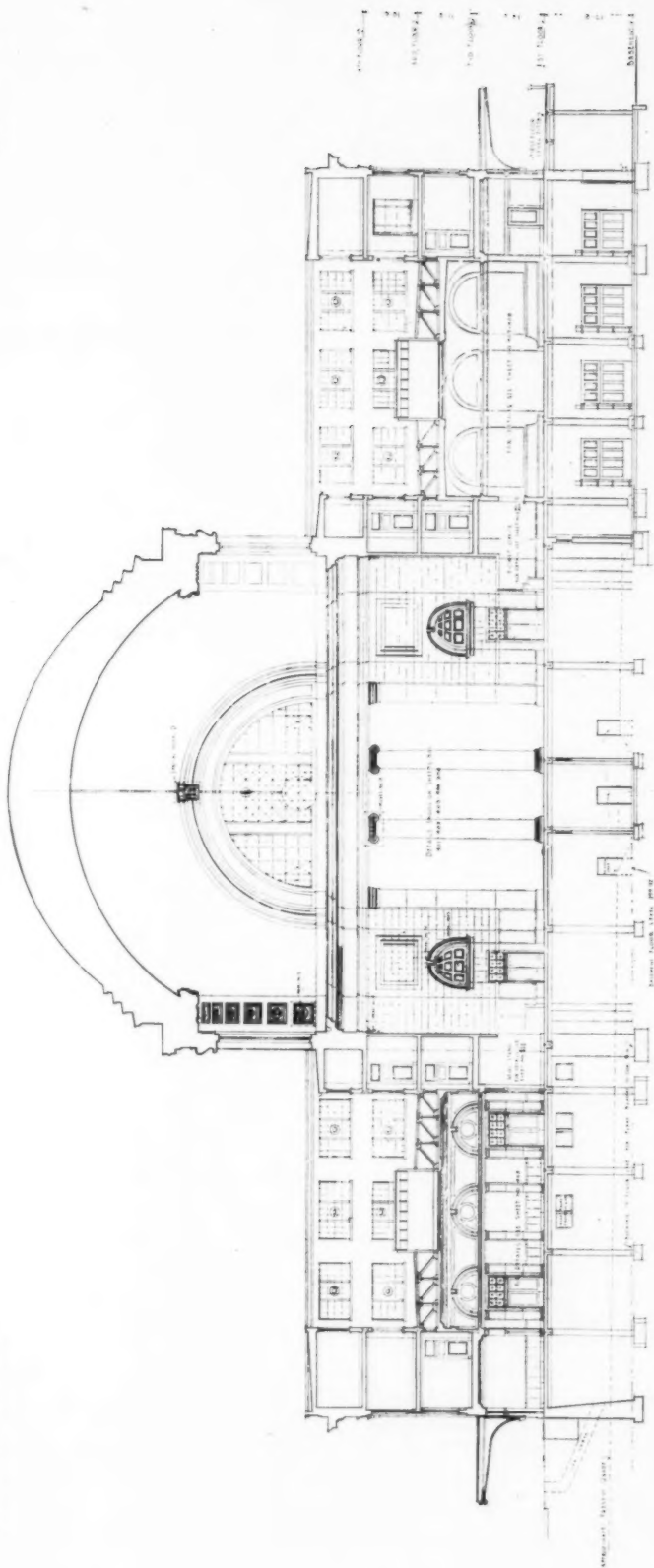
PLATE 16

UNION PASSENGER STATION, RICHMOND, VA.

JOHN RUSSELL POPE, ARCHITECT

Drawn by J. H. Pope, July 1919
JOHN RUSSELL POPE, ARCHITECT

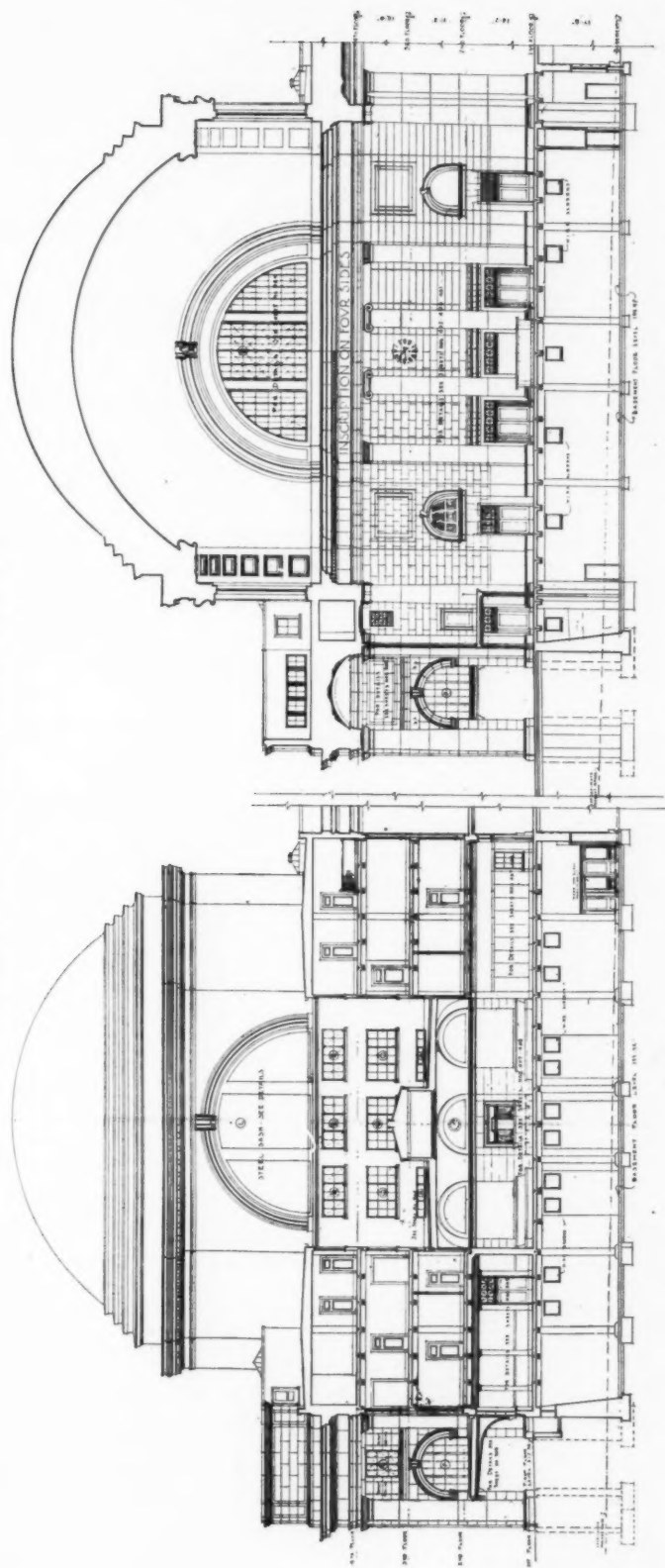
THE AMERICAN ARCHITECT



SECTION ON LINE 'A A'

UNION PASSENGER STATION, RICHMOND, VA.

JOHN RUSSELL POPE, ARCHITECT



SECTION - ON - LINE - B-B

SECTION - ON - LINE - C-C

PLATE 18

UNION PASSENGER STATION, RICHMOND, VA.

JOHN RUSSELL POPE, ARCHITECT

Current News

Annual Meeting, Illinois Society of Architects

The twenty-second annual meeting of the Illinois Society of Architects was held at the Auditorium Hotel, Chicago, June 24. There was a large and enthusiastic attendance of members and the social hour and dinner, preceding the business meeting, was thoroughly enjoyed. President A. F. Hussander, in his annual address briefly reviewed the work of the past year and the reports of the officers, standing and special committees were read. These indicated the wide range of the Society's activities and the gratifying results of its efforts. The co-operation between the Society and the Illinois Chapter of the American Institute of Architects, through joint committees, was especially noticeable, and it may be due to this condition that the Chicago and Illinois architects are able to maintain the commanding position they occupy in the profession.

The tellers of the letter ballot reported the following persons elected: President, Charles Herrick Hammond; first vice-president, Robert C. Berlin; second vice-president, N. Max Dunning; treasurer, J. A. Armstrong; secretary, George A. Knapp; financial secretary, H. L. Palmer.

The newly elected president, C. H. Hammond, made a brief and inspiring inaugural address, after which he introduced the guest of the evening, Thomas R. Kimball, president of the American Institute of Architects.

Mr. Kimball's address was a discussion of the resolution adopted at the Nashville Convention concerning the relations between the A. I. A. and the State Societies. He spoke extemporaneously and in a forceful and intimate manner. He spoke of the importance of the business of architecture and the conduct of architectural practice in a profitable manner. Credit was given the State Societies for emphasizing this feature of professional practice and for the benefits they had rendered the profession. His aim will be to continue to shape the Institute's activities along these lines with the view that it will ultimately render such complete service to the profession that the necessity for State Societies will cease to exist and that all reputable and competent architects, whether licensed or not, will be within its membership. In this way, duplication of effort by parallel organizations will be avoided.

Mr. Kimball expressed a thorough appreciation of the work of the Post-War Committee. He looks to it to solve the problems of the new day and declares that it should be made a permanent feature of Institute work. He earnestly besought the aid and co-operation of all architects in the work of this committee. After a very apt and delightful description of some of the regional characteristics of architects and the consequent effects on the profession, he declared in favor of a league of professional men, including lawyers, doctors, architects, engineers, and artists, all organized along the lines of the great and comprehensive trade, manufacturing and commercial organizations. It is only by means of such an organization that professional men, as such, can secure the benefits to which they are entitled.

Mr. Kimball's address was received with a ready and hearty appreciation by the society and will be one more

land mark in the progress of architectural organized effort. As a matter of historical interest, Harry B. Wheelock stated that twenty-two years ago several members of the Illinois Chapter A. I. A. wished to have the Chapter undertake the solution of several *business* problems affecting the Chicago architects. The Chapter decided that it was not within the province of the Institute to consider mere business, but that it should confine its activities to matters of an artistic and ethical nature. The result was the organization of the Chicago Architects' Business Association, later merged into the Illinois Society of Architects. A listener to President Kimball's address would be convinced of the fact that the Institute has traveled a long road in the past twenty-two years and now holds out a promise that it will become a broad and comprehensive organization.

By a unanimous vote, Mr. Kimball was made an honorary member of the Society.

The list of newly elected officers is a guaranty that the work of the Society for the ensuing year will be comparable to its past performance and that its influence and prestige will be maintained.

New York Society of Architects

At the annual dinner and installation of officers of the New York Society of Architects, signaling the close of the Society's activities for the vacation period, there was a large gathering.

After an enjoyable repast, President James Riely Gordon, in a characteristically humorous vein, introduced the various speakers of the evening. These included Messrs. Ford H. Dow, of the Dow Service, who took occasion to emphasize the necessity of co-operation between architects and the allied professions; the recent stress and suffering through which we have passed being largely due to lack of this. Mr. Dow remarked, further, that prices of labor and material showed no tendency to come down, but rather the reverse, and that now is the time to invest.

Mr. Hammel, Engineering Editor of THE AMERICAN ARCHITECT, indorsed the previous speaker's views as to the cost of building. He urged the architects to exert themselves and not to allow builders or others to usurp their proper functions. The architectural profession, though numerically a small one, is a national factor, and there is a great future before it.

Mr. Allen E. Beals, in a most interesting and instructive address, embracing as it did much statistical matter, predicted that prices would not reach their climax till the year 1922. The exodus of labor from this country partly explains this, there being nothing to take its place. Taking the various classes of building material, item by item, Mr. Beals showed that the present production is only from 30 to 40 per cent of the demand. Next year, the speaker predicted, it would be about 60 per cent, etc., until normal conditions are reached. There would probably be three billion dollars' worth of work done in the year 1922.

Mr. John De Hart, of the Board of Standards and Appeals, said this country is going to depend largely upon the education of other nations. Housing provision for

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40,000 families has to be met, besides the needs of other countries.

The Society's Second Vice-President, Edward W. Loth of Troy, said we must be prepared for great boom of business. Mr. Loth gave an account of the formation of a new State Association of Architects in Utica. In the course of some very interesting remarks the speaker enlarged upon the importance of the architect developing the artistic side of his profession. He said that to be great in architecture, a man must be an artist, as well as a master of construction and man of business. The necessity of amending the Registration Law, to make it effective for the exclusion of unqualified practitioners, was also urged by Mr. Loth.

Further interesting addresses were made by Messrs. Edwin Q. Bell, Real Estate Editor, James Kearney, Engineer of the Board of Standards and Appeals, and John P. Everett, the Society's counsel.

Finally, the chairman called upon Mr. John P. Leo, Chairman of the Board of Standards and Appeals, and member of the Society's Board of Directors, to contribute his share by way of a dessert to an intellectual feast of a very high order.

Mr. Leo, in his usual facile and convincing ways, took occasion to impress upon his hearers the necessity of aggressiveness and vim in winning the battle of life.

A number of new members were elected and applications received for membership.

Primary Medium in Architecture

The Illuminating Engineering Society is doing some interesting educational work among architectural students. In the course of lectures prepared for these men, angles are given in the practice of architecture in a straight forward way on matters of importance. One of the series explains the proposition that the primary medium in which the architect works is light.

He produces patterns in brightness and color by means of light reflected from his construction and their decorations. These patterns, translated into visual sensations, are what we see. It follows, then, that unless the object receives just the right character, distribution and color of light, it cannot produce the right pattern, and the message it conveys is more or less distorted. There is no such thing as beauty in an unheard symphony or in an unseen painting.

A design in perspective and color may indicate just the idea the architect has in mind. But when it is built and lighted by the means at hand, will it look the same? Will the delicate tints maintain their hue? Or will they lose their character with a change in the color of the light? There is little hue in the light emitted by the highest efficiency modern illuminant.

It is easy to draw a mold of graceful contour, but when it is in place will the pattern of high lights and shades produce the same visual impression? Then, we do not see its contour. And if it be drawn in relief with shadows a la McGoodwin, will the same shadows be produced when it receives light only from a window or a low-hanging chandelier? Can this chandelier, good in itself, light the room so that it will look as the architect conceived it in his mind's eye?

Thus does light and illumination control the final result. And, lest it be thought we are drawing distinctions rather

finely, let us remember that it is just refinements that cause us to admire so greatly the works of the masters. Yet we copy their cathedrals, sublime in their dim distances and deep shadows, and fill them with glaring brightness.

The second object of our description of the function of the eye is to show that the solution of the general problem of illumination depends upon knowing what we see, how we see, and why we see. The answers to the "what," "how," "why" must be given in terms of psychology, physiology, and physics respectively. The subjects are of relative importance in establishing the principles of good lighting almost in the order given. Any proper method of lighting, artistic or utilitarian, must fill the conditions so set.

Restoration of Rheims

While it has already been decided to restore Rheims Cathedral to some semblance of its former glory, it may be regarded as questionable whether this undertaking will be rewarded with success. French experts believe it is possible to achieve results in a labor of this kind. Probably they are correct. The French far surpass all other peoples in their ability to restore with sympathy and intelligence the architectural monuments of the remote past: Violet-le-Duc, greatest of all restorers, was a Frenchman, and his life work preserved for posterity many edifices that would otherwise have been lost. Where nine out of ten restorers utterly failed to preserve the beauty of the ancient structures Violet-le-Duc usually succeeded. But it may be questioned if even a Violet-le-Duc could make of the present ruins of Rheims anything but an undignified and unworthy patchwork.

The restorer who has only the ravages of time to repair has a comparatively simple task. The man who would restore Rheims cathedral must almost rebuild it. Nothing remains but a broken shell.

Such was the skill of the medieval architects and artisans that four years of constant battering by German guns failed to destroy the regal cathedral. It was ruined, but as a ruin it stands today dignified and appealing. Some of the best French sentiment is strongly opposed to restoration. It is held that Rheims today is grander and more eloquent than any restored Rheims could possibly be. Moreover, the Rheims ruin, if left untouched, would be the world's most eloquent monument. It would be a monument to the wickedness of war and to the agony of the French people. It would also be a monument to the wonderful skill of the original builders who did their work so well that four years of deliberate attempt to destroy the fabric that had weathered the centuries but added to its majesty.

Mexico to Restore Ruin

The palace of Cortez, in the suburbs of Coyoacan, is to be reconstructed by the government and used as a museum for relics of the Spanish conquest. The structure, 400 years old, has been allowed to fall into ruins. In the courtyard are ancient trees, under which Hernan Cortez and his familiars were wont to rest. These are hundreds of years older than the ancient building itself. The chapel attached to the palace is still in good condition.

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Housing Conditions in Washington Are Greatly Improved

The congestion in Washington, D. C., which resulted from the influx of war workers, has now been considerably relieved, according to a statement of the United States Civil Service Commission. Fully 20,000 persons have left Washington since the signing of the armistice, and a gradual further reduction will cause living conditions in the capital city to continue to improve. The commission states that it is informed by the Washington office of the Homes Registration Service of the Department of Labor that it is now in a position to provide rooming and boarding accommodations for all who apply for them. The Homes Registration Service constantly maintains a list of available rooms in private houses.

Our Early Art Was French

Historical reminiscences, awakened by present relations between France and the United States, recalls that in the early days of the American Republic French artists made the first sculptural representations of American men and events. America had portrait painters, as witness the surviving portraits of Washington, but no "statuaries," as sculptors were then called, of equal merit. The medals commemorating the American Revolution were struck chiefly in France, and Houdon crossed the ocean to model the bust of Washington, necessary for his statue of the American general and president. It was a grave question whether the sculptor should clothe the general in modern costume or dress him, after the art fashion of the time, in the classic garb of a Roman, and, as the story comes down, it took the combined opinions of Washington, Jefferson and Franklin to secure a statue of the Father of his Country in his own proper garments.

France Lists 213 Ruins

A list of the historic and monumental buildings completely destroyed or greatly damaged by enemy invaders in Northern France has been prepared by Louis Marin, general budget reporter, for presentation to the Chamber of Deputies. This body will decide the amount of money required for restoration, where this is possible. The list is a long one and includes 213 monuments and buildings of historic interest.

Among those destroyed beyond hope of restoration are the great castle of Coucy, the House of Musicians at Rheims, the City Hall at Noyon and the Cathedral and Belfry at Arras.

London Plans Big Building Program

Lumber manufacturers and dealers everywhere are interested in reports that an extensive demand for lumber has arisen in London. The possibility of large export business to supply these and other needs within the near future is the reason for an extensive canvass which is now under way.

According to reports from England the housing of the transient or floating population made up of soldiers and sailors on leave is one of the chief factors which is causing concern to the English authorities. Hundreds of thousands

of people have been attracted to London by positions in connection with the huge demobilization program of Great Britain and the United States. In a good many instances these workers have taken their families with them, thus causing such a demand for small flats and houses, that the result has been terrific congestion amid insanitary conditions.

It is declared that at least 100,000 new houses are needed in London alone. During the war 1500 houses were condemned as insanitary and should not have been used, but under the circumstances they had to be occupied.

The London County council has 106 acres on which houses are to be built at once which houses can accommodate 17,000 persons. It is proposed to spend \$17,032,750 on this program.

The London Government board has planned for erecting 300,000 houses, but the procuring of the material required is the great problem. It is estimated that fully 94,000,000 cubic feet of timber, 2,500,000 windows, and 3,000,000 doors are needed for these houses.

Art Gallery of Notre Dame

The Cavanaugh Art Gallery, regarded as containing probably the greatest university collection of paintings by old masters in the world, has been opened in the University of Notre Dame, Indiana.

In the Cavanaugh collection are paintings representing the schools of Milan and Lombardi, the Umbrian and Roman schools, the school of Bologna, the Holland school, the school of Naples and the Flemish school and the school of Ferrara. Many of the paintings recently acquired by the university are four centuries old.

Paintings by Battoni, Carlo Maretti, Andrea Sacchi, Zuccheri, Barocci, Bartolomeo and Luino, Corregio, Schidone, Carracci, Carrachi, Cignani, Dominichino, Sirani, Cuercino, Guido Reni, Van Dyke, Voellenurgh, Gherardo della Notte, Giordano, Colimena, Ribera, De Craeger, Jan Van Coninloo, Garofalo and Gauli are presented in the group.

One of the pictures painted by Verrazzano was valued at \$300,000 by a connoisseur, who recently came to the gallery in search of a Verrazzano painting. The collection is believed to be exceeded only by that of the Metropolitan art gallery in New York City, which is, of course, not connected with a college or university.

Reduction of Alaska National Forest

The President has signed a proclamation by which 307,800 acres of land are eliminated from the Chugach National Forest in Alaska. The elimination consists of two separate tracts, one known as the Ship Creek area near Anchorage, Alaska, and containing about 109,300 acres; the other is a strip of national forest land 3 miles wide between Fox River and Kasilof River, amounting to 198,500 acres. Much of the eliminated land is reported by the Forest Service examiners to have agricultural possibilities. This is the second large elimination from Alaska national forests made as a result of the land classification work done by the Forest Service. In 1915 the Chugach Forest was reduced by nearly 6,000,000 acres. The present elimination brings the forest down to approximately 5,500,000 acres with a stand of between 7 and 8 billion board feet of timber, much of which is valuable for airplane stock and paper pulp.

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Insurance Against Labor Shortage

With industry slowed down and the Army and Navy releasing 10,000 men or more daily, there is a surplus of labor in the United States at present. Yet there has never been a time when wise employers have felt the necessity more keenly of insuring themselves against an immediate and threatening labor shortage.

The reason for this imminent shortage is to be found in the falling off of immigration during the past five years. For the seven years preceding 1915, immigration into the United States averaged one million a year. In the period since 1915, the average has been more nearly 150,000 a year. When it is considered to what extent the United States is dependent upon immigration for its labor supply, a simple arithmetical calculation will show that an acute labor shortage is due very quickly—as soon, in fact, as industry has been restored to normal pre-war conditions.

For this reason Colonel Arthur Woods, assistant to the Secretary of War, whose duty it is to correlate the nation's efforts to find work for discharged service men, recently issued a warning to employers urging them to insure themselves against labor shortage by taking on ex-soldiers and sailors at the present time. "By this means," says Colonel Woods, "employers will help solve the problem of re-absorbing the army and navy, and at the same time will insure themselves against the serious shortage of labor which threatens the American market."

Would a Law Licensing Builders be a Good Thing for the Industry?

There has just been defeated in New Jersey, by one vote, a bill providing for the licensing of builders. In Milwaukee, during February, a bill giving the city power to license building contractors was introduced. Agitation for licensing of builders is nothing new, but the close call for the measure in New Jersey shows that it may be expected to pass in some state in the near future.

Will this be a good thing for the trade in general? Will it tend to concentrate work in the hands of the big contractors, eliminating the small man?

The answer to these questions depends largely on the manner in which the bill is finally drafted before enactment.

Undoubtedly the majority of capable contractors would welcome any law tending to prevent irresponsible bids and the cut-throat competition indulged in by the contractor who is not enough of a business man to know his costs. And even more important would be the elimination of the incompetent contractor who gives a black-eye to good materials and contractors in general. How many people, for instance, have been prejudiced against stucco because they have noticed cracked, unsightly jobs done by men incapable of handling the material correctly? Those badly done jobs naturally form a criterion for the prospective home owner, and he will shun stucco as he would the plague. Again, the sad experiences of many with fireplaces have caused the open fire frequently to be regarded with suspicion. Four-inch walled chimneys, unlined, have caused many a life-time's savings to go up in smoke; floor joints framed into chimneys, construction that causes plaster cracks—all these should and can be eliminated.

For this reason, if the wood is chipped at the extraction

plant into the largest size compatible with proper extraction, there will be much less waste in screening for the pulp.

Why should not the public be protected from the contractor who cannot build properly, who, if he makes a mistake, must either retrench by inferior work or become insolvent, and whose work affords him less than a day's wages on contracts where a capable builder, wise in labor-saving methods, would make a fair profit; should not the public be protected from such inefficient contractors?

The licensing of architects is doing much to raise the standard of that profession in a very practical way. No longer in licensed states can the owner of a Tee square and a book of the Orders set himself up as fit to take the public's money. Such laws have proved their worth, and laws licensing builders should be along the same lines.

Competition for Button Design for American Legion

Artists and others interested in evolving a design for a button to be worn by members of the American Legion, are invited to submit their ideas to the Emblem Committee, in accordance with the following conditions:

The design is to be possible of reproduction in bronze or other suitable metal.

Designs submitted must indicate the actual size of the button when reproduced and show also an enlarged detail.

Drawings must be in the mail by August 15, 1919.

Not more than two designs will be accepted from any one individual, company or corporation.

The drawings are to be signed by a *nom de plume* or device, and accompanying same is to be a sealed envelope with the *nom de plume* on the exterior and containing the true name and address of the contestant.

The Emblem Committee of the American Legion will meet upon receipt of all designs and select, therefrom, the ten that in their judgment represent the best. These will be re-submitted to a committee of three, composed of a noted Architect, Sculptor and Artist who will constitute the judges of final awards.

Cash prizes of fifty, thirty and twenty dollars respectively will be awarded for 1st, 2nd and 3rd choice. The four next best in order of merit will be given 1st, 2nd, 3rd and 4th Honorable Mentions.

Appropriateness, artistic worth and practicability are the elements that will determine the fitness of a design for consideration.

All drawings are to be delivered flat and are at owner's risk from the time they are sent until returned; reasonable care will be exercised in their handling and keeping.

The prize drawings are to become the property of the Committee and the right is reserved to publish or exhibit any or all of the others. The full name and address of the designer will be given in connection with each design published. Those desiring their drawings returned, except the prize drawings, may have them by enclosing in the sealed envelopes containing their names, sufficient postage.

This competition is open to all American citizens.

Submit all designs and communications to Charles Parsons, Secretary, Emblem Committee, American Legion, 663 Downing Avenue, Salt Lake City, Utah.

FREDERIC SHAW, Chairman,
Emblem Committee, American Legion,
414 Tacoma Building Tacoma, Washington.

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Illinois State Building Program

An extensive state building program* is to be started soon by the state public welfare department. An appropriation of \$6,299,547, the largest ever set aside for a state building program, is to be utilized for repair work, permanent improvements and the purchase of land worth approximately \$4,000,000, available for public buildings. Most of these new structures will be erected at the state's penal and charitable institutions, which care for 27,000 inmates and employ 4,000 persons, and are crowded in their present quarters.

The legislature also appropriated \$1,311,359 for repairs at the various institutions, \$122,000 for additions to old buildings, \$73,570 for improvements in heating, power and water plants, \$130,000 for other permanent improvements, and \$555,000 for the purchase of land. From the appropriation for land purchases an additional tract will be bought for the Jacksonville State Hospital, a tract for the site of the new Illinois State Farm for Men, additional ground will be acquired for the Southern Illinois penitentiary at Menard, and a site will be purchased for the group hospital, Chicago.

The total appropriations for all state institutions for the biennium will amount to approximately \$20,000,000. The plants of all these twenty-four institutions are valued at \$25,000,000, and their land holdings consist of more than 11,000 acres.

Antidote for Bolshevism

That industrial training is one of the best antidotes for bolshevism which has yet been brought forward is the declaration of Charles T. Clayton, director of the United States training service of the Department of Labor, who has recently been compiling some illuminating data on the benefits of training departments now in operation in more than 300 American manufacturing plants. A number of instances of unhealthy unrest among employees which has been changed to contentment by industrial training have come to the attention of the service.

"Of course, distinction must be made between wholesome discontent on the one hand and unwholesome unrest on the other," said Mr. Clayton in commenting on the benefits of training. "A man with a wholesome ambition will welcome training because it gives him an opportunity to gratify his desire to earn more, to become more skilled and to broaden his field of knowledge. Evil agitation, propaganda, thrive among those unfortunate victims of our industrial system who never have had an opportunity to learn any particular task well. With the introduction of machinery, training of the worker has been almost wholly neglected. Where it is practical this service urges the re-establishment of apprenticeship courses. In the many industries where this is not feasible we aid interested manufacturers in planning brief training courses in which each worker can learn the best way of performing his respective tasks."

The service has received reports from several of its district superintendents citing the cases of trouble-making workers, never properly trained in any task, who have become big assets to their respective employers and their families because of having taken training. This factory-given instruction has increased their self-respect and efficiency and has completely changed their outlook on life. "It has supplanted the destructive impulse with a constructive impulse," is Mr. Clayton's phrase.

Personals

L. L. Wagner, architect, has opened office at 2719 Overland Avenue, Baltimore.

G. W. Carstens, Jr., architect, has opened offices at 2813 Winchester St., Baltimore.

Heckenlively and Mark, architects, Suite 502 Landers Bldg., Springfield, Mo., desire catalogs.

C. E. Hall, architect, Chicago, formerly of 5 N. La Salle St., has moved to 123 W. Madison Street.

A. J. Gage, architect, Des Moines, formerly 606 Yagerman Building, has moved to 3507 Eleventh Street.

Geo. Burkhead, architect, Sioux City, Iowa, has moved his office to 510 Farmers' Trust and Savings Bank.

A. C. Frisk, architect, Des Moines, Iowa, has moved from 401 Central National Bank to 1249 East Fourteenth Street.

Henry Hopkins, architect, Baltimore, has moved his office from 212 Union Trust Building to 347 N. Charles Street.

W. B. Lahr, architect and builder, has opened offices in the Lennox Building, Cleveland, Ohio. He desires catalogues.

R. M. Dunbar, Architect, Monroe, Mich., has reopened office since leaving the service, 4 Front St. Catalogues and samples desired.

Clark & Dudnick, architects and engineers, have opened an office at 618 Drexel Building, Philadelphia, and desire samples and catalogues.

Messrs. McKee, Williams and Pettibone announce formation of partnership for practice of architecture, offices 225 28th St., Newport News, Virginia.

Maass Bros., architects, formerly offices at Detroit and Houghton, Mich., have consolidated the offices at 320 Broadway Central Building, Detroit.

Eric E. Hall, county architect, Chicago, moved offices from 11 South La Salle Street to Room 805, 123 West Madison Street, telephone Randolph 3705.

Albert R. Van Dyke, architect, Minneapolis, has returned from a year's Red Cross service in French hospitals. He plans to resume his professional work soon.

Frederic Shaw has returned from overseas and resumed the practice of architecture. Stanley T. Shaw, associate, 414 Tacoma Building, Tacoma, Washington.

W. J. H. Wallace, architect, has opened offices Rooms 24-25 Empire Building, Third and Keeler Streets, Bartlesville, Okla., and will be pleased to receive catalogues, samples and prices.

Leigh Hunt, architect, formerly with R. A. Messmer & Bro., has opened an office for the practice of architecture at 502 Security Building, Milwaukee, where he desires catalogues and samples.

Chas. J. Colrow, Harold H. Wrenn and E. Bradford Tazewell, having returned from military service in France, have formed a co-partnership and will resume the practice of architecture under the firm name of Colrow, Wrenn & Tazewell, with offices at 530-37 New Monroe Building, Granby St., Norfolk, Va.

News from Various Sources

Negotiations have been entered into by a homes corporation of West Virginia with the Greek government for 3000 ready cut homes.

According to Clarence Ousley, assistant secretary of agriculture, Kansas needs 100,000 laborers to help harvest the 200,000,000-bushel wheat crop in that state.

New York State, between now and August, will award contracts for construction work which will aggregate \$6,500,000 in cost, according to State Architect Pilcher.

Announcement has been made by Florida state officials that 1,000,000 acres of land bordering on the St. John's River are to be drained, work starting as soon as the bonds can be sold.

Senator Poindexter has proposed an amendment to the Sundry Civil Appropriation Bill, providing \$406,000 to purchase a site for a National Archives Building in Washington, and to pay for plans.

An optimistic statement on labor conditions in England and France, indicating that neither Bolshevism nor revolution is seriously menacing those countries, has been issued by the National Civic Federation.

It is announced that more than 1,500 well defined classes of Federal workers in Washington will result from reclassification on which the Congressional Joint Commission on Reclassification of Salaries is engaged.

It is announced from London that 200 young maples have been planted on the desert that was once Vimy Ridge, as beginning of proposed Canadian Memorial Forest. These are the only living trees in war zone today.

The "Federal Reserve Bulletin" for June estimates that more than \$3,000,000,000 of new funds must be provided by private initiative in the next few months, if the United States is to continue its export trade at the present high level.

The Director of Purchase, Storage and Traffic, Washington, D. C., has issued a compilation of all supply circulars and bulletins defining functions of Purchase, Storage and Traffic Division and its relation to various purchasing bureaus.

The Senate, on June 21, passed the bill of Senator Hoke Smith, providing for the vocational rehabilitation through Federal aid of persons injured in industry. Under proposed law, Federal Government and States will co-operate in supplying funds.

Office of Director of Sales, Washington, D. C., announces that Department has for sale a surplus of iron and steel, metal scrap and waste materials which has accumulated at manufacturing plants, depots, camps, posts and arsenals operated by respective bureaus in United States.

A history of prices during the war, covering the whole field of prices from the beginning of 1913 to the end of 1918, is announced for publication in the form of a series of bulletins by the Price Section of the United States War Trade Board. A bulletin on building materials is included.

Among recent Swedish aeronautical inventions is an apparatus for determining exact distance, altitude, direction and speed of any object in the air.

St. Louis Chamber of Commerce has approved a plan for formation of a million-dollar corporation to build homes for sale on time payments to men working for wages or salary.

According to a Paris dispatch, contracts for reconstruction work aggregating 200,000,000 francs, covering rebuilding of destroyed areas of Rheims, Nancy and Soissons, have been awarded to American firms.

Sir Thomas White, Canadian minister of finance, announces Canada's debt, including expenditures for the current year, will aggregate \$1,950,000,000, or \$220 per capita. Pensions will be \$35,000,000 to \$45,000,000 annually.

The Bureau of Foreign and Domestic Commerce has issued a report on international price comparisons, which contains tabular and textual matter tracing various price fluctuations in the principal countries of the world during the war period. The report shows the peak of prices was noted not during the war proper, but after the armistice.

Renewed hope for the passage of laws that will permit the production of coal, oil, gas, phosphate and sodium from public lands has been expressed by leaders of the engineering profession now that Congress is in session again. For a long time the nation has been in urgent need of these mineral products and the lack of suitable laws has cost money, time and world opportunity.

H. P. Davison, following conference at office of J. P. Morgan & Co., New York, has announced personnel of bankers' committee which is to represent N. Y. financial interests in drafting a comprehensive plan for extending aid to European countries and furnishing markets for American producers, as follows: J. P. Morgan, Chairman; J. S. Alexander, J. S. Brown, A. Forbes, A. W. Kerch, C. H. Sabin, J. H. Schiff, J. Stillman, S. Prosser and A. H. Wiggin.

Exclusive of public debt disbursements, which include matured certificates of indebtedness refunded out of the proceeds of bonds and taxes, the total treasury disbursements for the 26 months that have elapsed since the United States entered the war amount to over \$31,631,000,000. This includes \$9,047,000,000 loaned to the Allies. The ordinary expenditures of the Government, for its own war account and the usual administrative expenses (which would have amounted in normal times to about \$2,400,000,000), amounted to \$22,412,000,000.

The value of industrial education in manufacturing plants is shown in a bulletin entitled "How Training Departments Have Bettered Production," just issued by the training service branch of the Department of Labor. It contains a symposium of experiences in the training departments of seventeen American factories, representing various industries, together with valuable suggestions as to how to carry on instruction, the approximate length of time required, cost, etc. The bulletin may be obtained without cost by addressing the United States Training Service, Department of Labor, Washington, D. C.

Late News from Architectural Fields

Special Correspondence to THE AMERICAN ARCHITECT

For a National Archives Building in Washington

WASHINGTON, D. C., July 5.—An amendment to the sundry civil bill proposed by Senator Poindexter of Washington this week provides for an appropriation of \$496,000 for the purchase of a site and to pay for working drawings of a national archives building. No appropriation for the building itself has been made, but Senator Poindexter is confident that the passage of the amendment will assure funds for that purpose.

Attempts to secure legislation permitting the construction of an archives building have been unavailing in the past. The Commission of Fine Arts in its last report to the President, stated that the Bureau of Archives was an institution urgently demanded on the score of both economy and utility. It was pointed out that no other government has been so negligent of its archives, which are the basis of its history.

The commission believes that the archives should be housed in a fireproof building, and classified, arranged and indexed so as to make them easily available. The Commission wants the building designed chiefly for the purpose of storing documents; it may be simple in character, with adequate rooms for the office force and for the consultation of documents. The location suggested by the Commission places the archives building in the area south of Pennsylvania Avenue.

To Design a Museum Building to Lodge Indian Americana

WASHINGTON, D. C., July 5.—Proposals have been made to introduce a new style of architecture in Washington. George Oakley Totten, architect, is understood to have received a commission from a collector of American Indian curios to design a museum which will later be given to the U. S. Government. The proposed building will be of distinctively American character and embody many features of the structures in pre-historic Yucatan.

Mr. Totten has recently returned from a month's inspection of the ruined temples and cities in Yucatan. As restoration was rendered difficult through the depredations of early Spanish explorers, it was deemed essential that the architects should obtain first hand information as to the designs of the unknown builders. It is the intention of Mr. Totten to reproduce the salient points of architectural beauty of the Temple of the Tigers. The plan for directly reproducing the details rather than attempting to originate details is favored because the world knows little of the symbolism of the ancient Yucatan temples.

The architecture of the pre-historic peoples in Yucatan was highly conventionalized. Archeologists have been unable to give an intelligent account of the legends and mythology. Photographic reproductions of the ruins show

the ancient architects had a sense of dignity and scale. There is nothing to indicate copyist methods from Europe.

Of especial interest to American architects is the fact that Mr. Totten obtained several rare fragments through exploration. While archeologists have informed the world of the wonderful color schemes, both interior and exteriors, which characterized the buildings of ancient days, details regarding color work were discovered. Mr. Totten believes that with the material in Yucatan, he can reconstruct the entire color scheme of any one building.

The Mayan school of architecture has long been a source of mystery. Study of the ruins has been exceedingly difficult and almost fruitless. There have been many causes for the disintegration of these historic structures—natural and unnatural. Tree growths have demolished roofs and sidewalls; natives have defaced the friezes and decorations so that many of the architectural wonders are forever lost.

In reference to the designs of these temples, Mr. Totten said:

"A fine example of monumental building is found in the edifice called 'El Castello,' something like a small Greek temple, situated at Chichen Itza. This 'El Castello' is on top of a truncated pyramid 105 feet high having a base 200 feet square. Originally this pyramid was entirely faced with cut stone. The exquisite little temple surmounting the whole is so simple and yet so classic in design that it might well have been the work of the ancient Greeks.

"The ornamentation of these palaces, temples and other buildings is not only exceedingly elaborate, but is all symbolical, yet there is now no clue to the significance thereof. For example, there is one huge mask which occurs on nearly all the more important buildings. The nose, or snout, rather suggest an elephant's trunk, yet elephants have not existed in the western world since before the glacial age. The teeth are like the fangs of the rattlesnake, which reptile played an important part in the architecture and in the religious life of the people and was considered sacred. The ear and eye come as near being conventionalized human organs as anything else, yet what the whole combination means, no one today can say.

"The Mayan sculpture is never naturalistic but always highly conventional. This question of conventionalization almost determines the relative standard of an art, and in this case the result almost equals that of the best Greek work.

"Many statues in the round were originally found, but were almost entirely destroyed. The panels in high relief, however, representing the hierarchy and sovereignty in general, are all remarkable both in composition and execution. The colors were elaborate and beautiful. At present, we know of none we can really call a 'fast blue' yet these people left samples of blue shades which have apparently not deteriorated at all in a thousand years. There is one fresco in the interior of the Temple of Tigers which shows in great detail and with considerable artistic ability a spirited attack on the town, with the women inhabitants encouraging their warriors from the housetops."

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Architects Helping Duluth

DULUTH, MINN., July 7.—To meet the estimated shortage of 3,000 houses in Duluth, the Duluth Architects' Association and the Builders' Exchange have taken the initiative and will jointly arrange to build the much-needed houses.

The two organizations, believing that houses can be built more economically than has been done in the past, have completed arrangements for building three houses at the lowest possible cost. Each architect has promised to submit at least three complete plans and specifications for houses costing between \$2,500 and \$6,000. Any architect who has more than three houses which he believes would be satisfactory may submit plans for them. Eventually there will be fifty or more plans submitted. The Builders' Exchange will then have these plans figured for material, millwork, subcontract, and by general contractors. In other words, more than 100 of the leading Duluth firms will submit estimates for this work. The lowest estimate is the one that will be used—the same plan to be operated in connection with the electrical, plumbing and heating work. Lowest bids for the general contract, plumbing, heating and electrical, will be shown on the plan in order that the prospective builder will know exactly what the house will cost before the contract is signed. These houses are to be modern in every respect.

The exchange will not finance any of these houses, but one company has already offered to loan several hundred thousand dollars to start this work and other real estate and investment companies have offered their co-operation.

It is desirable that the prospective builder first select the house and then pick out the lot, as often the lot is not satisfactory for the style of house that the builder and his family may decide upon.

Much encouragement has been received from all lines of industry in Duluth, and it is the idea of the proponents of this plan that all the work shall be done in Duluth and by Duluth men. No material whatsoever will be purchased from outside Duluth.

Many persons are using stock plans, which result in several of the same style of houses in the same locality. This will be overcome, as there will be sufficient plans to select from, and the possibilities of two or more persons in the same neighborhood selecting the same plan are obsolete.

Our Timber Resources

WASHINGTON, D. C., July 7.—Until a complete census of our timber resources is made, the U. S. Forest Service states that it hesitates to make any estimates as to the number of years the supply of timber will last "as there is not available in the United States to-day reasonably accurate knowledge regarding our remaining timber stands and the rate of growth on cut-over lands."

Timber estimates have been made from time to time in various parts of the timber areas of the United States, but different methods were followed and none of these estimates have been complete in regard to areas covered for the regions that supply the timbers. Roughly, however, the present stand of cypress is estimated at 25 billion board feet; sugar pine, 35 to 40 billion; eastern red cedar, 1½ to 2; basswood, 8 to 10; yellow poplar, 10; red gum, 40 to 45; Port Oxford cedar, 1 to 2; eastern white pine, 25; western white pine, 20 to 25; eastern spruce, 25; Sitka spruce, 10 to 12; Engelmann spruce, 25. Most of the stands of all of these species, continues the statement of the Forest Service, would be available under sufficiently strong demands.

Financial Digest

Valid Insurance

A building is not insured; it is a person who is insured for the loss of a building. The common misunderstanding on this point has led to endless trouble, according to The New York Building Managers' Bulletin. But fire insurance is not a bet between anybody and an insurance company that a certain building will burn within a certain time, and the law severely frowns upon any such notion. Sometimes it is even difficult for a person who stands to take a substantial loss in case of fire to purchase valid insurance, to say nothing of the idea that a policy covering a building protects whoever has any interest in it, or whoever holds the policy, as is often supposed.

The insured must have an insurable interest in the property insured or the policy is void. Hundreds, perhaps thousands, of such void policies are carefully treasured in safe deposit vaults by unsuspecting persons, most of whom, it is pleasant to learn, will never need to know they could collect nothing on them.

The aim of fire insurance is to make good to persons the intrinsic money value of losses they have sustained by fire. If a person stands to lose nothing through the destruction of a building by fire he has no insurable interest in it, no matter how many policies he holds.

Accurately stating the name of the person who actually may sustain a loss by fire and defining his exact interest, and seeing to it that these facts are correctly stated in the policy, is important.

England's Recuperation

England was never so active as today. There is no "paralysis" there. During the war her industries were so well developed that conditions are better than ever. This is the opinion expressed to the New York Evening Sun by Sir Joseph Davies, M. P., who represents the great railway center of Crewe in the British House of Commons. With J. H. Thomas, M. P., Sir Joseph is visiting America.

"So far are we from a state of paralysis," said Sir Joseph, "that of the four million workers discharged from the army or from war-time occupations three million have already been absorbed by peace-time industries. This includes half of the odd 500,000 women who lost war jobs with the cessation of hostilities.

"Our mines, our food production, our other industries have been so developed during the war that we are working as never before.

"Of course, certain industries have been affected by the blockade of the European markets. This, in fact, is one of the few things that is preventing a complete return to normal conditions, and once peace has been brought about this obstacle will be removed.

"There is no more acute problem in England at present than that of housing. Rents have not jumped, for the government passed laws to prevent that, and the workmen can obtain accommodations now in a house that rents for from nine to ten shillings a week. The trouble

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is, however, that there are not enough accommodations. Two and three families are living in houses meant to accommodate but one. Each of these families is contributing only a part of the total rental of the house, so that the landlords are making no more, but, for the same sum, each of these families should be able to obtain a house built by communities, with the co-operation of the government, for the rent now being paid for houses.

"In fact, before long, building will be in full swing, and not only will there be tens of thousands of homes in course of construction in England within a short time, but the employment problem, as it exists to-day, will be solved by the additional building. The houses that are put up by town councils, with the financial aid and co-operation of the state, are modern in every respect, with up-to-date plumbing and lighting.

Free Trade Cause of British Supremacy

Mr. Vanderlip, at the Hotel Astor recently, painted a dark picture of conditions in Europe but an essentially truthful one. But he is reported to have made one statement about England which *The Seattle Star* believes should be qualified. He said:

"England has held the premier position in the international industrial markets. America grew, but England grew too. America grew faster. So did Germany grow faster. But England had, up to the outbreak of the war, held the premier position. Now, how did she hold it? She had little raw material, some iron, and some coal; that was all. I will tell you how she held it. She held it by under-paying labor. That was her differential. That is how she competed. She under-paid labor until to-day labor has not a house over its head in England, and the government is undertaking to build a million houses for workmen—a million houses!"

While it is undoubtedly true that English wages were low at the time when England entered the war, there is a reason for the fact which Mr. Vanderlip has overlooked. The wages were certainly higher than those in Germany in any comparable branch of industry, and Mr. Vanderlip quotes Germany as the most successful competitor of Great Britain in the struggle for international trade. Our own home markets were the secret of our high wages and prosperity, and foreign trade was to us a subordinate matter.

But the reason why British wages were low is largely because Britain was the world's one great free-trade country. At the top of Cheapside, near the General Post Office and St. Paul's Cathedral, there is a statue of Sir Robert Peel with a simple, noble and inspiring tribute to that great statesman:

"He gave the people cheap bread."

Food in England was far cheaper, city for city, class for class, at the outbreak of the war and long afterward than it was here. The English workman's wages therefore were low, in part at least, because his purchasing power was greater. His saving power, where he was thrifty enough to put something by, was, of course, not so great as that of our industrial workers. But there the margin for savings, at least in the past, did not enter into the question of wage fixing, and with a higher wage than the German but one much lower than our own the standard of comfort was fair.

Of course, prices advanced by leaps and bounds with the outbreak of the war, and wages had to advance to equal them. But British international trade was not built up on starved workmen but on great shipping facilities, the freest and most intelligently administered financial center of the world, and a relatively low cost of living in spite of the advance in commodity prices in the previous decade.

The Coming Labor Shortage

Open-minded students of the industrial situation in the United States are becoming convinced that there is little prospect of an immediate drop in wages. One of the strongest elements in establishing this conclusion is the fact that nearly every change recently made has been in the direction of a higher scale of pay. The labor unions that have struck for increases, in most cases, have won their fights, and almost invariably have done so where the rate had not been recently readjusted upward.

While this apparent tendency may dash the hopes of those who had been looking for a reduction in the living cost, it must be admitted that some powerful economic forces, some of them unprecedented in character, are arrayed on the side of maintaining a high wage scale.

The labor problem for years has been growing more and more international in character. The ease of ocean transportation, facilitating the shifting of hundreds of thousands of unskilled laborers from one continent to another, has permitted this country to prosecute much of its development work at a lower cost than otherwise would have been possible. Mining, construction and other enterprises have been carried on under European living conditions although the rate of pay has been sufficiently attractive to tempt Old World labor to our shores.

New elements now have to be considered. In the first place we cannot expect immigration on the pre-war scale. Re-emigration, in fact, is likely to exceed new arrivals. Our military and naval establishments, in spite of demobilization, will be likely to claim many thousands of young men who under former conditions would be engaged in the productive pursuits of civil life.

The world's need for food is going to call hundreds of thousands to the farms. Agriculture holds forth the greatest profit in history. Present prices mean that farmers can compete with industrial employers in bidding for labor, with board and lodging in addition.

Next to the demand for food products comes the impending competition for labor that will come from building operations. Hundreds of thousands of skilled and unskilled workers will be needed in the construction of houses and office buildings all over the United States. Men must be employed to furnish the steel, the lumber bricks and other material needed for these structures.

When we speak of returning to pre-war conditions we mean peace conditions. Even in our own unscarred country many changes have taken place since the summer of 1914. We have developed new industries that call for workers by the hundreds of thousands. We are building ships, manufacturing chemicals, making dye-stuffs and hundreds of minor necessities and luxuries that we used to import. All these operations require labor, and the question is not one of unemployment, but shortage of labor, now or in the near future.

General Stabilization in Building Field Fast Approaching

The pronounced activity in all affiliated lines is steadily bringing about a more normal resumption of business in the construction field all over the country.

It has been the general belief that the high level of prices reached during the war was caused by the extraordinary demand for commodities which exceeded the supply. With the war demand a thing of the past, there was naturally expected a sharp drop in prices and a price level early approximating in pre-war prices.

It was also commonly believed that the industrial capacity of the world had been greatly expanded under the stimulation of war orders, and that this expansion would bring sharp competition between rival concerns in time of peace. Furthermore, it was thought that there would be great armies of unemployed workmen, the result of demobilization, who would be compelled by necessity to accept work at low wages and that there would be sharp competition among the leading nations in international trade; and that buyers generally, looking forward toward an era of lower prices, would postpone buying. In the light of these considerations it was but natural for people to expect a great fall in prices, and even to fear an industrial panic. In fact certain college professors of economics had seriously predicted such a condition.

The expected fall in prices has not occurred nor is it likely soon to occur.

The rise in prices during the war was not merely the result of a great demand for goods and of a scarcity of certain goods. It was largely brought about by means of inflation of the currency by the governments at war and by the neutrals, either by the direct issue of paper money or by the issue of bonds. Although war orders are now largely a thing of the past, the extension of credits still exists as a continuing cause of high prices. There is little to indicate an early contraction of credits.

World production in general during the war, contrary to a widely held view, was not abnormally large. This is shown by statistics of world production of leading basic materials of industry such as coal, petroleum, iron ore, and of cotton, sugar, wool, wheat, and other agricultural products. Consequently the abnormal consumption of goods for war purposes has depleted the stocks of commodities of the world.

Armies of unemployed, in the United States at least, have not materialized, and an actual labor shortage is in prospect. Wages are not likely to be lowered.

Buyers since the armistice, although showing a desire to wait for lower prices, have been compelled to buy to meet their daily needs. During the war, because of scarcity of commodities and high prices or because of patriotic self-denial, they did not buy in advance of need, as is customary in an era of rising prices, consumers' goods are in great demand and retail trade is now moving in great volume.

If the production capacity of industry should be greatly increased, lower prices would not necessarily follow. If there is a strong enough demand for commodities, prices need not fall, no matter in how large volume commodities are produced. There is every reason for expecting such a strong demand. The world is now suffering from a great shortage of durable goods—buildings, transportation facilities, and industrial equipment. Furthermore people, both in the United States and Europe, have a stronger

desire for consumers' goods than ever before. This is true partly because of the scarcity of certain goods during the war period, and partly because of the new experiences through which tens of millions have passed, which have awakened in them desires for goods and services they never enjoyed before. Along with greater production of goods there is likely to go further extensions of credits rather than contraction. Neither the credit system of the United States nor that of the world has reached the limits of its power of expansion.

Summing up the present conditions in the building field, the Division of Public Works and Construction Development of the Department of Labor, counsels the business men of the United States to proceed at once on a policy based on an immediate period of business prosperity.

It further states that no period of depression and no collapse of values need be feared.

The man who goes full speed ahead will score an advantage over his procrastinating competitor which will outweigh any possible slight decline on cost of production.

A revised bill, providing for a national building loan system, which would divide the country into eleven districts in each of which a Federal building loan bank may be operated, has been introduced in Congress. This bill has been redrafted and amended by a sub-committee of the United States League of Building and Loan Associations. With the early passage of the measure there would cease the deficiency in funds available for building loans that now exists.

The impression exists in some minds that the banks when established would make direct loans of government funds to persons desiring to build homes. This is a mistake. The plan contemplates the organization of federal home loan banks as Clearing Houses for building and loan associations, which would then be able to realize on their long-time mortgages, and thus to meet increased demands for loans.

According to the plan a group of building and loan associations could combine for the organization of a Federal home loan bank, in which they would deposit a block of mortgages taken in the regular course of business. Against these mortgages the bank would issue bonds up to 80 per cent of the value represented. The bank would sell these mortgages in the market, turning over the proceeds to the association which had deposited them, the association executing a note to the bank for the amount thus received.

Recent legislative action in New York State will naturally open the way for a resumption of building. Many restrictions have been removed and savings banks are permitted to make more liberal loans. This legislation has at once resulted in the resumption of a certain class of building surely indicating an early return to a state of normal building conditions.

From our Special Correspondent

CHICAGO, ILL., June 28.—Increased activity in all lines affiliated with the building industries is fast bringing about a period of "business as usual" in this city with all
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Department of Architectural Engineering

Annual Meeting, American Society for Testing Materials

Atlantic City, June 24-27

THE twenty-second annual meeting of the American Society for Testing Materials was held at the Hotel Traymore, Atlantic City, N. J., June 24 to 27, 1919, with a record registration of 637 members and visitors.

While no attempt will be made here to set forth in any detailed manner the various subjects presented at this meeting, since they covered an exceedingly broad field of engineering and building materials, such phases as are believed to be of general interest to architects will be presented.

The entire record of the meeting, including all papers and reports presented, will appear with discussions, in the official proceedings of the Society, sent to all members, and purchasable by non-members.

On the evening of the opening day—Tuesday, June 24—the annual address of the President, Gulliam H. Clainer, was delivered. The subject treated by him was "Standardization," a topic receiving much attention in every field of progressive endeavor at the present time. As an example of the difficulties attending lack of standardization he mentioned the homely illustration of the candle and candlestick maker, following:

There was a time when the candle maker and the candlestick maker each made their wares to suit their own inclinations. As a consequence, seldom did the candle user find that the candle would fit his particular candlestick. Time, in the days of candle illumination, was, however, not so precious as it is today, and a little more or less time consumed in shaving down its end, if the candle was too large, or if too small, in whittling a wedge to support its base, was of little consequence.

It nevertheless finally dawned upon these two classes of manufacturers that if they were to get together and standardize the size of the candles, and also make the sockets of their candlesticks of such dimensions that the candle would properly fit, time would be saved, annoyance prevented and convenience promoted. This is one of the first examples of standardization, and it has been referred to by Sir Joseph Whitworth, one of the early workers in the field of standardization.

There is no doubt that lack of standardization of such products as can and should be standardized is both wasteful and costly. THE AMERICAN ARCHITECT has repeatedly pointed this out. The Building Bureau of the Board of Education of New York City has shown the possibilities of effecting economy and facilitating the progress of construction, through efficient standardization in school house design.

As showing some of the beneficial results of standardization Mr. Clainer said:

Only within the present century has standardization in manufacturing processes, methods and practice been seriously pursued and so-called scientific management inaugurated. Industrial progress owes much to the adoption of such standardization. In the automobile industry particularly we have outclassed the world because of such standardization. The adoption of standardization to shipbuilding during the war has put America, within two years time, in the first rank in this industry.

Quantity production can be realized only by reason of such standardization, and at the time of the signing of the armistice, quantity production in the manufacture of our airplanes was well under way and history will no doubt reveal the fact that this was quite instrumental in bringing our enemies to the realization that it was futile further to pursue the war.

During the war, conservation of our resources became an absolute necessity and the work of the Conservation Division would have had far-reaching effect had the war continued. The Conservation Division was organized to perform the function, which was expressed by the President in his letter to Mr. Baruch, as "the studious conservation of resources and facilities, by means of scientific, industrial and commercial economies, to meet war requirements."

The necessity for such standardization, as a war measure, was unquestioned, but just how far such standardization, in peace times, would be economically advantageous or economically detrimental, is speculative. Consumers are willing to pay for selection and for the gratification of their individualistic tastes as to style, color, form, etc. It is this fact which, in a very great measure, has resulted in the enormous number of commodities, differing in only slight degree from each other, now being offered on the market. A reference to but a few typical examples of our war-time conservation will be of interest in pointing out the wonderful possibilities in this direction.

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Pneumatic tires, reduced from 232 styles to 9; solid rubber tires, 100 styles to 15; steel pens, 700 to 300; china and crockery, from 1696 pieces to 330; 5500 styles of rubber footwear discontinued, meaning a yearly saving as follows:

29,012,600 cartons
5,245,300 sq. ft. of lumber
4,795 tons of freight
1,526,423 cu. ft. shipping and storage space
2,250,272 lb. of material that will not have to be dyed
74,750 lb. of flour and starch
30,380 gallons of varnish
125,300 lb. of tissue paper
49,617 days of labor

Consider such a matter as the method of packing thread. If marketed with 200 yd. to a spool, instead of 100 and 150, there would be saved 5,146,815 ft. of lumber or 365 carloads. The saving in shipping space of finished product is about 600 cars, in wrapping paper $3\frac{1}{4}$ tons, and in twine, 5 tons. Had the yardage been reduced to 100 yd. per spool it would have required over 600 cars to transport the lumber, so that the total saving is 1200 cars by using the 200-yd. spool.

With these few examples, it can be readily realized what tremendous savings might be effected if a safe and sane policy of standardization was put into effect through co-operative agreements. It means lower cost of production, smaller capital investment, etc., with a greater amount of capital released for more useful purposes.

Continuing, he spoke of International Standardization and the possible fields to which standardization might ultimately reach, including (1) International Language; (2) International Religion; (3) International System of Weights and Measures; (4) International Standard of Temperature; (5) International Coinage System; (6) International Gaging System; (7) Miscellaneous Standards; (8) International Standards of Material; and (9) International Standards of Testing.

Under (3) which it seems is of considerable interest to the profession, he said:

All are agreed that the Metric System is ideal. It is in use by every civilized nation with the exception of the United States and Great Britain and some of her colonial possessions. An association, having as its object the world-wide adoption of the Metric System, is in existence. This association, known as the Metric Association, is at the present time taking advantage of the world-wide desire for closer co-operation by carrying on a strong campaign for the adoption of the Metric System in England and in the United States.

The old German Osterling-Hanseatic League, which for hundreds of years controlled the trade of England, introduced the British pounds, both sterling and avoirdupois. We fell heir to these standards, which had been forced upon the British, through the British possession of a large part of the United States prior to the Revolutionary War.

It was James Watt, the eminent scientist of Great Britain, who invented a few years after the American Revolution, the decimal system of weights and measures now embodied in the Metric System. Unfortunately, we did not adopt the Watt System in the early days of our independent existence, neither did England adopt it notwithstanding the fact that it was a British invention. Germany, however, soon after the war of 1870 did adopt

it. Germany, during its war with France, having acquired a closer familiarity with the decimal system, was brought to a realization of its superiority over their own system. The Metric System is referred to as the French system because of the French unit (the meter) employed.

To change from one system of weights and measures to another is no easy matter and it is exceedingly costly. The advantages, however, to be gained are so far reaching that the loss occasioned would be soon wiped out. We are to-day suffering because of the unfortunate choice and adoption years ago of a cumbersome system. To rid ourselves of this is analogous to taking a large dose of quinine, bitter and disagreeable, but nevertheless effective, with the patient better off for having taken it.

As a means of realizing the benefits of standardization in this country insofar as engineering and building materials are concerned, Mr. Claimer referred to the recently organized American Engineering Standards Committee, whose size and scope of investigation it is now proposed to broaden, reorganizing the Committee into an American Engineering Standards Association, embracing in addition the subjects of safety codes, fire-protection, etc.

In conclusion he said:

Personally and unofficially, I feel that there is a real need and a real field for such a committee or association, and it but remains for the various details as to organization, policy and methods to be worked out and these should have most careful consideration.

I feel that the seal of approval of such a committee or association would give great weight and added recognition to a specification. I believe, however, that it would be a decided mistake for such a body to attempt to pass upon the substance of a specification, or to choose between two conflicting specifications covering the same subject which may be presented by two distinct standardizing bodies. No such specification should have the seal of approval unless the specification representing the joint action of such bodies be presented. All such standards, when finally adopted as American Standards, should be ever open for revision, otherwise practice will become crystallized.

National engineering bodies are in operation in England, Canada, France and Holland, and it can be confidently predicted that such bodies will be organized in other countries in the near future. Because of our present excellent and rapid means of communication, all the countries of the world are being brought in much closer relationship than ever before and in the immediate future there will begin an era of intermingling of the peoples of the various nations of the earth to a far greater extent than ever before, and it is therefore reasonable to assume that before many years have elapsed the needs of the world will demand international standardization to an ever increasing extent.

Following the address of the President, a memorial session in honor of Dr. Edgar Marburg, late secretary-treasurer of the society was held. The life and life work of Edgar Marburg, 1864-1918, was presented by those who had been intimately associated with him. President Claimer spoke on behalf of the Executive Committee, and emphasized the loss sustained by the entire society in the death of Dr. Marburg.

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In the ten sessions held many interesting topics were discussed. Relative to the preparation of iron and steel surfaces for painting, the committee investigating this subject has a number of sample panels now undergoing exposure tests at Brooklyn, N. Y., and Altoona, Pa. A progress report giving the results to date was submitted, but it was felt that these exposure tests should be extended over a period of one or two additional years in order to arrive at definite conclusions. Such final conclusions will be awaited with interest as there seems to be a lack of specific information on this important topic.

Corrosion. The subject of the corrosion of iron and steel was discussed with considerable interest. Rolled iron and steel in many shapes are used in building construction, and the failure of such material by corrosion after a few years' service is a serious factor to be reckoned with. Exposure tests are being conducted under the direction of committee A-5 on corrugated sheet metal panels at Fort Sheridan, Ill., Pittsburg, Pa., and Annapolis, Md. These specimens are of No. 16 and 22 gauge metal, some of Bessemer steel, some of open hearth steel, some of low copper pure iron, some of puddled iron, some of low copper open hearth steel and others with varying copper content. The rate of corrosion for the Pittsburg series seems much more rapid than for the others, and already five groups of low-copper sheet metals have been eliminated as having failed. Just what benefit a medium copper content has on retarding corrosion is not definitely brought out, but the committee states:

The conditions of the sheets with photographs and tables showing the results of the inspection and certain generalizations are given in detail in the report of the sub-committee.

It is realized that this exposure test covers only bare sheet metal exposed to atmospheric corrosion, and it may not be justifiable to conclude that the restraining influence of copper applies to galvanized or even painted metal, or metal exposed to alkaline conditions. It is hoped that further tests may establish these points.

As throwing further light on this subject, however, a paper was presented by D. M. Buck entitled "The Influence of Very Low Percentages of Copper in Retarding the Corrosion of Steel." The summary of this paper follows:

Previous work by the author indicated that copper in steel in amounts heretofore considered as only traces, materially influences the corrosion rate. In order to obtain further information, two heats of basic open-hearth steel were copperized in varying amounts from approximately 0.01 per cent up to 0.25 per cent. Sheets and test specimens from the various ingots were exposed to the weather for varying lengths of time, and the paper includes tables of chemical analyses and weight losses, as well as photographs and charts, showing condition of sheets and test specimens after exposure.

The following conclusions have been drawn from the results of this investigation:

1. Very low amounts of copper in steel materially lower the corrosion rate.
2. Steel with 0.03 per cent of copper corrodes only 60 to 70 per cent as fast as the same steel with 0.01 per cent of copper.
3. It has been customary to consider a copper content of any amount under 0.05 per cent as a trace, and it may be desirable to reinterpret many corrosion data obtained in work in which the effect of these minute amounts of copper has not been taken into account.
4. In order to leave an ample factor of safety, steel to resist atmospheric corrosion should contain not less than 0.15 per cent of copper.
5. Copper in amount of 0.12 per cent is sufficient to neutralize the influence of sulfur as high as 0.055 per cent.
6. Copper in amount of 0.15 per cent is sufficient to protect steels even if the sulfur content is considerably higher than normal.

A number of photographs showing the condition of the test specimens, and bearing out the author's conclusion are included in the paper. It must be borne in mind, however, that a proper interpretation should be placed on the result of these tests. The locality in which the test panels were exposed is especially severe on sheet steel due to the atmospheric conditions peculiar to that region. It was brought out in the discussion that plates of similar composition exposed in another locality did not give like results. It would therefore be fair to conclude, from the information so far in hand, that Mr. Buck's conclusions are correct for sheet metal exposed in locations where the atmospheric conditions are similar to that existing in the vicinity of Pittsburg.

Brick. Committee C-3 on brick, submitted with their report proposed tentative specifications for building brick, the result of work which has extended over a number of years.

The first section is as follows:

The standard size of building brick shall be $2\frac{1}{4}$ by $3\frac{7}{8}$ by 8 in.

The physical tests recommended include absorption, compression and transverse tests.

The classification is determined as follows:

7. (a) According to the results of the physical tests, the bricks shall be classified as vitrified, hard, medium and soft bricks on the basis of the following requirements:

Name of Grade	Absorption Limits, Per Cent		Compressive Strength (on Edge), Lb. per Sq. In.		Modulus of Rupture, Lb. per Sq. In.	
	Mean of 5 Tests	Individual Maximum	Mean of 5 Tests	Individual Minimum	Mean of 5 Tests	Individual Minimum
Vitrified brick.	5 or less	6.0	5000 or over	4600	1200 or over	800
Hard brick.	5 to 12	15.0	3500 or over	2800	600 or over	400
Medium brick.	12 to 20	24.0	2000 or over	1500	450 or over	300
Soft brick.	20 or over	No limit	1000 or over	800	300 or over	200

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(b) The standing of any set of bricks shall be determined by that one of the three requirements in which it is lowest.

Lime. Committee C-7 on lime submitted with their report tentative methods for chemical analysis of limestone, lime and hydrated lime. The chairman of this committee, D. Knickerbacker Boyd, M.A.I.A., is to be congratulated on his efficient leadership and the active work done by his committee.

Reinforced Concrete. With reference to the work of Committee C-2 on reinforced concrete, it was decided, that inasmuch as the preparation of standards covering this type of construction involved engineering design also, it would be well to enlist the co-operation of other associations interested in the subject, with the object of forming a joint committee. It is hoped such a committee will shortly be organized and that by next year considerable progress will have been made on this important subject.

Gypsum. One of the reports of considerable interest was that of Committee C-11 on gypsum. This material has been employed in building construction in a constantly increasing quantity. It has even been used as a structural material for roof and floor construction by reinforcing with steel rods. Gypsum plasters are also the best for applying on plaster boards and gypsum blocks. The report as originally submitted included tentative specifications for gypsum, calcined gypsum and for gypsum plasters, as well as a tentative report on the design of reinforced gypsum beams and tentative methods for tests of gypsum and gypsum products. While the report was amended so as to include (in the proceedings) the tentative specifications for gypsum plasters as a tentative report it is felt that much valuable material is contained therein, and architects should use this data as the best practice so far set forth in this field of construction.

Concrete. Two of the papers presented which caused an interesting discussion, were: "Some Theoretical Studies on Proportioning Concrete by the Method of Surface Area of Aggregates," by R. B. Young, and "Proportioning of Pit Run Gravel for Concrete," by P. H. Bates. The extensive investigations and experiments which have been made during the past year are rapidly bringing out the necessity of changing our present methods for proportioning concrete to a more scientific basis in order to secure greater economy in the use of cement. Two theories have been advanced during this period, the one known as the "Fineness Modulus" method of Prof. Duff A. Abrams, described in *THE AMERICAN ARCHITECT* of May 21, and the other known as the "Surface Area" method ad-

vanced by Capt. Edwards. Both methods require control of the water entering into the mixture in order to obtain high strengths. Neither method has as yet been given practical tests over a sufficient period of time to determine their correctness. It was brought out that the *fineness modulus* bears a definite relation to the *surface area* of the aggregate, though not varying in any direct ratio. It is hoped that the various work being done can soon be co-ordinated so as to give the architect something definite and conclusive to work on in writing his specifications and supervising the construction of the buildings he plans. *THE AMERICAN ARCHITECT* will present data on this subject from time to time as it becomes available.

Cement. A paper on Cements Producing Quick-Hardening Concrete was presented by P. H. Bates. The summary on the paper follows:

There have been prepared at the Pittsburgh Branch of the Bureau of Standards certain cements which have the property of hardening very rapidly. These were made in a manner no different from that used in making Portland cement. Their composition differed very materially from the composition of the latter, in that they were composed very largely of lime and alumina.

These calcium aluminates, when they are very high in alumina, do not have a very marked rapid initial set, but do harden very quickly and therefore produce high early strengths. Some of the maximum strengths were 3145 lb. per sq. in. for 1 : 6 gravel concrete tested in the form of a 6 by 12-in. cylinder at the end of 24 hours, 6010 lb. per sq. in. at the end of seven days, and 8220 lb. per sq. in. at the end of one year.

There is presented herewith also the results of testing some 6 by 12-in. cylinders in which the bonding material was "Sorel cement". These are cements produced by gaging light calcined magnesias with magnesium chloride solution. Such a cement develops in 24 hours a strength approximately equivalent to that developed at the end of seven days by a similar concrete made with Portland cement.

Both of these cements commend themselves for certain special uses, where a quick-hardening concrete of high strength is desired. Neither would be desirable where subjected to the continued action of water. The Sorel cement alone is on the market at the present time.

As much has been claimed for concrete of this type the architect is warned against using such material for locations in which it is entirely unsuitable. Exterior work should be made with material better able to resist the action of rain.

On Thursday afternoon, June 26, a golf tournament was held on the course of the Atlantic City Golf Club, at Northfield, N. J. While the weather was somewhat threatening a number of the members entered the tournament.

On the whole the conference was interesting and enlightening and another chapter has been added to our progress in the field of engineering so ably covered by this Society.

Annual Convention of American Concrete Institute

Atlantic City, June 27-28

THE annual convention of the American Concrete Institute was held at the Hotel Traymore, Atlantic City, N. J., June 27 and 28, 1919. The date was arranged so as to permit a joint meeting with the American Society for Testing Materials. The Institute is the foremost agency in this country for presenting information on concrete and its uses, and the reports and papers presented at these annual meetings are always awaited with interest by those connected with concrete construction. While it is not possible to reprint these in full, some of the important features will be mentioned, and extracts given. The report of the committee on Treatment of Concrete Surfaces contains valuable information on stucco work. The committee states:

One of the fundamental considerations in successful stucco work is a suitable design of the structure for stucco. The architect does not always realize that an exterior plaster of any kind merits whatever protection can legitimately be given it, that for the sake of appearance it needs more protection against leakage and drip than brick, stone, or even wood exteriors. Thus it must be recognized that stuccoed copings, cornices and horizontal or nearly horizontal surfaces are more exposed to deterioration than vertical surfaces, that attention to details of chimneys, down spouts, gutters, window sills, and overhead flashing will avoid much unnecessary staining and unsightly cracking. * * * As the committee is of the opinion that walls of hollow tile, brick, concrete, concrete block, and similar materials, are superior to frame construction for the application of stucco, a change in the usual order of the paragraphs under "Structure" is recommended. It seems advisable, also, to include somewhat more detail in the paragraphs relating to masonry surfaces.

Here follows a specification of the various materials used in stuccoed masonry walls.

Of frame walls the report says:

Good bracing of the frame is important to secure the necessary rigidity. Bridging between the studs at least once in each story height is recommended whether the frame is to be sheathed or not. In the former case the bridging serves as a fire stop, even if not necessary as bracing, and should be of the same size as the studs (usually 2 x 4 in.). In the back-plastered type of construction where sheathing is not used, bridging is required for stiffening the frame, and should be 1 in. less than the studs in depth. It should be placed horizontally, and 1 in. back of the face of the studs, in order that the back-plaster coat may be carried past the bridging without break at this point. Diagonal bracing at the corners of each wall is recommended, especially when sheathing is omitted. Such bracing may be of 1 x 6-in. boards, 6 or 8 ft. long, let into the studs on their inner side in order not to interfere with the back plastering or the interior plastering. The length of the corner bracing will, of course, depend to some extent on the location of window or other openings.

When sheathing is used it should be laid horizontally

and not diagonally across the studs. The stucco test panels erected at the Bureau of Standards in 1915 and 1916 have demonstrated conclusively that diagonal sheathing tends to crack the overlying stucco by setting up strains in the supporting frame. This result is undoubtedly due to the shrinkage of the sheathing, and whatever benefit might be anticipated from the more effective bracing provided by diagonal sheathing appears to be more than offset by the shrinkage effect. Diagonal sheathing is also less economical than horizontal sheathing, both in material and labor.

Waterproofing of the faces of the studs in back-plastered construction seems to be ineffective and unnecessary, and its elimination is recommended.

The proper type and depth of furring is a question on which information is desired. If metal lath is applied over sheathing and the commonly recommended practice of filling with mortar the space between lath and sheathing is to be followed, there seems to be no good reason for using furring deeper than $\frac{3}{4}$ in. On the other hand 1 x 2-in. wood furring is widely used for both metal and wood lath, and there are good arguments both for and against this type of furring. The question of the proper length and gage of staples for metal lath is involved with that of furring. The entire subject needs investigation. At the present time the committee is not sufficiently well informed to recommend a change in the existing paragraphs of the specification, aside from reducing the depth of furring from $\frac{3}{4}$ to $\frac{1}{2}$ in.

Metal lath should be specified by weight rather than by gage, and should be always galvanized or painted. Galvanized lath is a good investment in most cases, and is to be recommended in preference to painted lath, unless the method of applying the stucco is such as to insure complete embedment of the metal, as, for example, in the back-plastered type of construction.

The results of tests and field observations indicate that more attention should be given to the application of lath to exterior surfaces. Cracks frequently develop in stucco over laps or at junctions of metal and wire lath, indicating a weakness at these points. This may be due in part to reduced thickness of the stucco where the lath is lapped, or to insufficient tying and fastening at the joints. The ideal job of lathing would obviously be that in which the lath forms a uniform fabric over the structure, without seams or lines of weakness, and with equal reinforcing value in all directions. This ideal condition cannot be realized, but evidence is at hand to indicate that butted and laced, or well-tied horizontal joints are better than lapped joints, and in the case of ribbed lath, that carefully locked joints are better than lapped joints. Vertical joints must almost of necessity be lapped, but the joints may be made secure if they occur over supports and are well stapled at frequent intervals.

The use of wood lath as a base for cement stucco finds many advocates and many opponents, and more field and test data should be available before the evidence for and against wood lath can be carefully weighed. Further information is desired in regard to the type of wood lath best suited for cement stucco. In some of the most satisfactory work reported by the committee, the lath were of white pine 1 in. wide and $\frac{1}{2}$ in. thick. Both material and size were here unusual, but the committee is of the opinion that this type of narrow lath is worthy of con-

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sideration. For want of information as to the practicability of specifying any particular kind of wood and unusual dimensions, no change is suggested at the present time. It may be stated, however, that nearly all of the test panels of wood lath erected at the Bureau of Standards developed large cracks, in such manner as to suggest that narrower lath (those used were 1 $\frac{3}{8}$ in. wide) with wider keys and heavier nailing would have given better results. The tests also indicate that counter lathing in which the lath are applied lattice fashion produces no more satisfactory results than plan lathing. In view of the much greater cost of the counter lathing the committee recommends that reference to this type of application be omitted from specifications.

The really important part of stucco work is the mortar coat. The following taken from the report should be carefully kept in mind by architects when writing specifications on such work:

Practice varies widely in the mixture and application of stuccos. The use of hair, lime, and waterproofing materials, the variations in the mixtures for the different coats, the number and thickness of the coats, the intervals between the coats, the degree of wetting of the undercoats, and the precautions necessary in protecting the coats from too rapid drying, are details subject to question, and all will stand further investigation. However, the study of the experimental panels at the Bureau of Standards has yielded considerable information on some of these points.

One of the most important indications from these panels is that lean mixtures containing well graded aggregate give better results than those commonly specified. Mixtures as lean as one part of cement to six or seven parts of graded aggregate have given excellent results in these tests. The committee is of the opinion that the volume change of rich mortars is accountable for much of the unsightly cracking of stuccos, and that no mixture should be used in which the proportion of cement is greater than one part to three parts of fine aggregate.

The effect of hydrated lime in cement stucco has also been given considerable attention, and the conclusion which is forcing itself upon the committee is that hydrated lime does not improve the structure of the stucco, but by imparting better working quality to the mortar, reduces the cost of application. On the other hand there is evidence that not more than 20 per cent of hydrated lime, by volume of the cement, should be added to cement stucco if the best results are to be obtained.

There seems to be no good reason for varying the composition of the different coats, but if a variation is to be specified, the scratch coat should logically be the strongest mixture followed by a leaner brown coat, and a still leaner finish. No greater mistake has ever been made in stucco application than the use of a strong brown coat over a weak base or a weak scratch coat. The not uncommon practice of applying a strong brown coat over a lime mortar scratch coat has been responsible for many stucco failures.

The suggestion that the finish coat should logically be leaner than the undercoats immediately brings up the waterproofing question. There are two fundamental points to be considered in this connection; first, that the lean coat is not necessarily lacking in density, and second, that the waterproofing problem in good cement stucco is not one of overcoming permeability, but rather of reducing absorption. The entire question hinges on absorption, and the evidence at hand indicates that a moderate degree of absorption is a much more preferable condition than

a surface covered with craze and map cracks produced by the use of a too rich or wrongly manipulated finishing coat. Any waterproofing treatment that alters the natural texture and color of the stucco may be dismissed from consideration, and the merit of any integral waterproofing in stucco is exceedingly difficult to determine.

The question as to number and thickness of coats may be best answered by assuming that each coat of stucco has its own particular function. The scratch coat is the first applied, and its purpose is to form an intimate bond and a secure support for the body of the stucco. On metal lath it also serves as a protective coat, and it should therefore be strong and not too lean. The use of hair or fiber is of questionable value. Hair or fiber should not be used when the space back of the lath is to be filled, and is probably not a necessary ingredient in any case. The committee at the present time would sanction its use only in scratch coats on wood lath, or on metal or wire lath that is to be back plastered, or on metal or wire lath that is applied over furring deeper than $\frac{3}{8}$ in. The thickness of the scratch coat should average about $\frac{1}{4}$ in. over the face of the lath.

The function of the second coat (commonly called the brown or straightening coat) is to establish a true and even surface upon which to apply the finish. It forms the body of the stucco, and must fill the hollows and cover the humps of the scratch coat. For this reason an average thickness of $\frac{3}{8}$ in. to $\frac{1}{2}$ in. will usually be required. The brown and finish coats, or the scratch and brown coats, are sometimes combined in two-coat work, which is permissible when the base upon which the stucco is applied is fairly true and even, or when, on account of cost considerations, the best obtainable finish is not required. It is difficult, however, to obtain a satisfactory finish on a coat which runs $\frac{1}{2}$ in. or more in thickness, since the tendency of a heavy coat to bag and slip is likely to produce an uneven surface.

The finish coat serves only a decorative purpose and has no structural value. Its function is solely to provide an attractive appearance, and any mixture or any method of application that may detract from the appearance, or in any way injure its permanency, should be avoided. Herein lies the argument for lean mixtures, which are more likely to be free from unsightly defects than rich mixtures, and are also more likely to improve in appearance under the action of the weather. The finish coat should be as thin as possible consistent with covering capacity, and may vary from $\frac{1}{8}$ in. to $\frac{3}{8}$ in. in thickness, depending upon the type employed.

It is obvious from the foregoing that first-class stucco should be three-coat work, each coat serving its own particular purpose. The bond between the brown coat and the scratch coat needs to be strong in order to carry the weight of the body of the stucco, and for this reason it is now considered preferable to apply the brown coat the day following the application of the scratch coat. Except in dry or windy weather little wetting of the scratch coat should be necessary when the brown coat is to follow within 24 hours. A slight degree of absorption of "suction" in the scratch coat, is probably better than complete saturation, for the brown coat, as well as the others, is necessarily mixed with a larger quantity of water than it requires for maximum strength. The removal of a portion of this excess water by the suction of the undercoat not only improves the quality of the coat, but also insures a better bond by tending to draw the fine particles of the cement into the pores and interstices of the undercoat.

Whereas the interval between the brown coat and scratch coat, as recommended above, is relatively short,

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the interval before applying the finish coat should be as long as permissible under the conditions of the work. The reason for thus delaying the application of the finish is to enable the body of the stucco to obtain its initial shrinkage and a nearer approach to its final condition of strength and hardness, before being covered with the surface coat. The bond of the latter needs to be intimate rather than of maximum strength, and if the body of the stucco has been allowed to thoroughly set and harden, it may be assumed that the finish coat is less likely to be disturbed by subsequent volume changes in the undercoats. A week or more should elapse between the application of the brown and finish coats.

The finish coat should be applied over a damp, but not saturated, undercoat, for excess water is likely to injure the bond seriously. Certain types of finish, such as the wet mixtures used for sand spraying, or for the "spatter dash" finish, may preferably be applied to a fairly dry undercoat, since suction must be depended upon to prevent streakiness and muddy appearance. The fact that finishes of this type applied in this manner may set and dry out with little strength is not serious; they gradually attain sufficient hardness with exposure to the weather.

Curing of the undercoats by sprinkling, and protection of finish coats against sun, wind, rain and frost by means of tarpaulins are always to be recommended. This is not always feasible, however, and the architect should be content to specify and insist upon reasonable precautions. The application of cement stucco in freezing weather should be avoided, and in fact temperatures slightly above the freezing point may allow frost to form on a damp wall. The application of stucco under such conditions is likely to result in failure.

During the war the Concrete Ship Section, Emergency Fleet Corporation, developed a special light weight aggregate for concrete, thereby obtaining a concrete of considerable strength weighing as little as 99 lbs. per cubic foot. This aggregate has attracted considerable attention, and much speculation has been entered into as to its use in building construction. A paper entitled "Economic Possibilities of Light Weight Aggregate in Building Construction" was presented by A. W. Stephens. While this included much interesting data and allowable costs per cubic yard were given which would permit the higher priced but lighter aggregate to compete with trap rock and gravel, it remains to be seen whether such concrete can be produced within the limits given. There are, however, very interesting possibilities in this material, and no doubt in the near future some pioneer will construct a building of light weight concrete, when actual figures will be available for study and comparison.

Many of the papers were devoted to the work of the Emergency Fleet Corporation, these being illustrated by both lantern slides and moving pictures. A medal was awarded W. Leslie Conyn of San Francisco, who was responsible for the first ocean-going concrete ship, "Faith," built in the United States. This ship was launched March 14, 1918, at Redwood City, Cal., made a successful voyage around Cape Horn to New York City, and is still giving satisfactory service. The medal was awarded

to suitably commemorate this splendid achievement.

The report of the committee on fireproofing was presented by the chairman of that committee, Walter A. Hull, of the U. S. Bureau of Standards, Pittsburgh, Pa., who also presented a paper on Fire Tests of Concrete Columns. The data contained in this paper is considered so important that it will be presented in one or more articles at a later date.

One of the reports, which has been awaited with some interest, is that on Standard Building Regulations for the Use of Reinforced Concrete. The discussion following the presentation of the report indicated that these regulations still contained several points of controversy and were not entirely acceptable. For that reason the proposed regulations as presented, with certain amendments, will be printed in the proceedings as a progress report of the committee. One of the points criticized was section 14, which reads:

Cinders shall not be used as coarse aggregate in concrete for reinforced concrete structures without tests acceptable to the Building Department showing the strength of such concrete. Cinder concrete may be used for fireproofing, for floor and roof slabs, not exceeding 8-ft. span, and for partitions. Where cinders are used as the coarse aggregate they shall be composed of hard, clean, vitreous clinker, free from sulphides, unburned coal or ashes.

Cinder concrete is used very extensively in New York City, and the possibility of obtaining cinders conforming to this specification is very doubtful. Prof. Ira H. Woolson, who has had much experience with cinder concrete, went on record to the effect that, in his opinion, 15 per cent of unburned coal was not detrimental and might be permitted in anthracite cinders, and that a small percentage of ashes could also be allowed without bad effects in the resultant concrete. This matter will be considered further by the committee in light of the discussion. Those sections relating to the design of flat slab construction were criticized rather severely by Professor Talbot of the University of Illinois. It is to be hoped that by next year a satisfactory set of proposed regulations will be presented and adopted. The matter of adopting flat slab regulations is at present under consideration in New York City.

A paper illustrated by lantern slides on the concrete work of the huge Brooklyn Army Supply Base was presented by A. C. Tozzer.

Other reports and papers dealing with various phases of concrete work were read, all of which will be printed in the Proceedings of the Institute.

The Wason Medals for the years 1916, 1917 and 1918 for the papers presented at the annual meetings of those years considered as adding most largely to the sum total knowledge of concrete were awarded as follows:

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For 1916, to Prof. A. B. McDaniel for his paper "Effect of Temperature on the Strength of Concrete"; for 1917, to Major Charles I. Gow for his paper, "History of Concrete Piles"; and for 1918, to Prof. Duff A. Abrams for his paper, "Effect of Time of Mixing on Strength of Concrete."

The impression gathered at the convention was that concrete is a very live issue with a lot of live men behind it, who are engaged in an earnest endeavor to find out all they can about their subject, and apply the knowledge thus gained to benefit all

types of construction employing the use of concrete.

The increasing use of reinforced concrete in building construction, generally accompanied by a reduction of cost when compared with steel, and often no more expensive than mill construction, as well as the many improvements being brought out, make it necessary to closely watch developments in this branch of the building industry. Since knowledge is power, may the profession add much to their knowledge by apprehending such information as that presented by the American Concrete Institute.

Bill to Create a National Department of Public Works

FAR reaching changes in the executive machinery of the Federal Government are proposed in bills recently introduced in each house of Congress. The Federal Department of the Interior will become the Department of Public Works, if the legislation proposed is enacted. The main idea is to assemble all engineering activities of the Government in one department, along the lines advocated by the recent engineers', architects' and constructors' conference at Chicago.

Such bureaus of the Interior Department as are non-engineering in character will be placed under the jurisdiction of appropriate departments, while engineering bureaus from other departments are to be included in the proposed Department of Public Works. Under the provisions of this bill the Patent Office will be transferred from the Interior Department to the Department of Commerce. The Bureau of Pensions is assigned to the Department of the Treasury; the Bureau of Education goes to the Labor Department, and the Bureau of Indian Affairs is also transferred to the Department of Labor, with the proviso that the engineering and construction work and the land and mineral surveys now performed under the direction of the Bureau of Indian Affairs are to be prosecuted under the Department of Public Works. St. Elizabeth's Hospital and the Freedman's Hospital in Washington are assigned to the Treasury Department. Columbia Institution for the Deaf and Howard University go to the Bureau of Education, under the provisions of the bill.

On the other hand, the Department of Public Works is slated to absorb the following bureaus: Supervising Architect's Office of the Treasury Department; the Construction Division, River and Harbor Improvements, Mississippi River Commission, and the California Debris Commission of the War Department; the Bureau of Standards and the Coast and Geodetic Survey of the Department of Commerce; the Bureau of Public Roads and the

Forest Service of the Department of Agriculture.

The bill provides that the Secretary of Public Works "shall by training and experience be qualified to administer the affairs of the Department and to evaluate the technical principles and operations involved in the work thereof." The measure excepts from the foregoing provision the Cabinet Officer who is at the head of the Department at the time of the passage of the bill.

Four Assistant Secretaries, each to be paid \$7,500 per annum, are provided and their duties outlined. One Assistant Secretary is to have administrative jurisdiction over all matters of engineering design and construction. Another is to have charge of architectural design and construction. The third is to have jurisdiction over all scientific work and surveys, while the fourth Assistant Secretary is to be in immediate charge of all land and legal matters. The Assistant Secretaries are charged with the duty of co-ordinating and bringing into efficient relationship all the activities of the Department so that it may be harmoniously and efficiently administered.

An important feature of the bill is the proviso: that engineer officers of the U. S. Army detailed on non-military work are to be assigned by the Secretary of War to like duties under the new department, for not over two years. This enables the Secretary of Public Works to make gradual transfer of improvements and instrumentalities to civil administration without detriment to public interest. Members of the Corps of Engineers may, under the direction of the Secretary of Public Works, be detailed by the Secretary of War to temporary duty in the new department for such instruction, training and experience as is desired.

The bill, which was introduced in the upper House by Senator Wesley L. Jones, of Washington, and in the lower House by Representative Frank C. Reavis, of Nebraska, will be printed in full in a later issue of THE AMERICAN ARCHITECT.

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General Stabilization in Building Field

(Continued from page 52)

markets holding exceptionally strong and the supply of some of the more staple products being far short of meeting the demands of trade. This is particularly true of lumber. All reports from the mills indicate an acute curtailment in production because of the labor situation and weather conditions adverse to logging operations.

The supply of dry lumber now in the hands of the manufacturers in any of the producing sections is far short of the demand. The order files are filled, it being reported that in many instances the mills have bookings to keep them busy for the next sixty or ninety days. The west coast manufacturers have just adopted Discount Sheet No. 6, advancing all items of fir yard stocks \$3.00 per M feet. Northern hemlock is advancing. There has been recent sharp advances in northern pine. Prices of yellow pine are jumping up almost overnight with many of the mills oversold and out of the market.

The demand for all building material in this market still is from the contractors engaged in small projects, but the permits issued indicate big building activities are about to start. A total of 114 permits were issued last week as compared with 35 the same week last year. The value of the permits issued last week is \$2,079,900, as against \$593,700 for the permits issued during the corresponding period in 1918. Lumber, brick, cement, and all metal building items are moving in exceptionally good volume at prices which show but little change. Competition is strong in all lines.

The sash and door and the planing mill industries are

unable to take on all the business offered, and in explanation of this situation is probably a condition which exists to-day in many industrial plants of the nation. It is a peculiar attitude of labor. The sash and door manufacturers say business is now back to at least seventy per cent of normal, yet because of the inefficiency of labor they are unable to operate their plants at more than sixty per cent of normal capacity. Wages have been increased from fifty to eighty per cent, say the employers, the workers are asking for more pay and shorter hours, and at the same time they are producing less individually. They are old hands with years of experience, say the manufacturers, and this attitude of "more pay and less service for the money" is sweeping the country in an ever-widening circle.

Industrial activity in the Chicago territory is expanding constantly. Retail distribution of all building materials continues in large volume and collections are good. More contracts for buildings are being awarded than at any period since the cessation of hostilities in Europe. It is becoming more and more evident that the people are convinced that prices of material will increase rather than decrease, and that the upward trend in all values will continue for an indefinite period. The public realizes that because of conditions there is a great lack of material in the hands of all producers.

Increase in the volume of all manufacturing lines is developing a demand for factory plants and contracts for such buildings are being awarded based on the present costs. The manufacturing buildings are needed to take care of the increased business, and the manufacturers apparently figure that the increase in their profits because of expansion in trade will take care of the increase in the cost of construction. The demand for investment property, such as hotels and apartments, is increasing rapidly.

Late Quotations in Building Material Markets

(Price quotations now current on building materials and supplies as quoted by dealers and jobbers for delivery in New York and Chicago follow. The quotations set forth are placed before readers of THE AMERICAN ARCHITECT to afford an accurate review of market conditions rather than for use as a basis for actual purchase. They will not only provide knowledge of the exact state of the market as to items quoted, but will also present a basis to judge conditions as affecting correlating materials. Items marked (*) indicate an advance over last week, while those marked (†) record a decline. Other prices did not fluctuate during the week.)

	New York	Chicago
BRICK		
Face brick (delivered on job):		
Common (Delivered at job in Borough of Manhattan only), per thousand.....	\$17.85	\$12.00
Rough red	29.00	40.00
Smooth red	26.00	40.00
Rough buff	32.00	40.00
Smooth buff	32.00	40.00
Rough gray	38.00	42.00
Smooth gray	40.00	42.00
Colonials	24.00	30.00

BROKEN STONE		
(Delivered on job):		
1½ in. per cu. yd.....	\$2.75	\$2.25
¾ in. per cu. yd.....	2.75	2.25

BURNED CLAY		
(Delivered on job)		
Block partition:		
3 in., per sq. ft.....	.13	.10
4 in., per sq. ft.....	.15	.11
Chimney tops:		
12 x 12 for 8 x 8 flues.....	\$3.50	\$2.25
Flue lining:		
4½ ft. x 13 ft., per lin. ft.....	.24	.12
4½ x 8½, per lin. ft.....	.18	.16
8½ x 8½, per ft.....	.24	.16
8½ x 13, per ft.....	.54	.20

	New York	Chicago
13 x 13, per ft.....	.46	.28
8½ x 18, per ft.....	.54	.32
13½ x 18, per ft.....	.70	.42
18 x 18, per ft.....	.90	.55
Wall coping (double slant):		
8 in., per lin. ft.....	.16	.14
12 in., per ft.....	.26	.18
18 in., per ft.....	.54	.30
Wall coping (single slant):		
8 in., per lin. ft.....	.16	.14
12 in., per ft.....	.26½	.30
18 in., per ft.....	.54	.30
(Corners and angles four times the price of one foot of coping the same size.)		

Hollow Tile		
(Delivered at job, in New York below 72nd St.)		
2 x 8 x 12 partitions, per 1,000 sq. ft.....	\$70.15	
3 x 12 x 12 partitions, per 1,000 sq. ft.....	102.00	\$67.90
4 x 12 x 12 partitions, per 1,000 sq. ft.....	114.75	72.50
6 x 12 x 12 partitions, per 1,000 sq. ft.....	153.00	99.60
8 x 12 x 12 partitions, per 1,000 sq. ft.....		135.80
10 x 12 x 12 partitions, per 1,000 sq. ft.....		167.50
12 x 12 x 12 partitions, per 1,000 sq. ft.....		194.60
2 x 12 x 12 split furring, per 1,000 sq. ft.....	63.75	

CEMENT		
Per bbl. in 15 cent bags (Rebate 60c. per bbl. for bags)	\$3.25*	\$3.25*

COPPER SHEETS		
At the mill, hot rolled, 16 oz. base-price, per lb.....	27½c.*	27½c.*
(From jobber's warehouse add 2 to 3 cents. Cold rolled add 1c. per lb. to hot rolled.)		

CORNER BEAD		
Per foot	.02	.05
FIBRE		
Per bushel	.36*	.30

(Continued on page 52-B)



A QUALITY PLANT WITH A QUALITY ROOF

THE Beech-Nut Packing Company started out years ago with the Quality idea in food products.

Covering its first Quality food factory was a Quality roof—a Barrett Specification roof.

And as the years have passed and the wonderful growth of the Beech-Nut business has demonstrated the soundness of the Quality idea in foods, additions and new buildings have been added to the plant—and they have all been covered with the same Quality roof.

Today the entire plant, illustrated above, is covered with Barrett Specification Roofs.

The Quality Idea in Roofs

Many years ago The Barrett Company started to work out a specification that would make it possible for building owners everywhere to obtain through their local contractors, a Quality roof based on the best scientific principles of roof construction.

The result was The Barrett Specification. Today Barrett Specification Roofs cover more permanent buildings than any other type.

They take the base rate of insurance; they are guaranteed (under the simple conditions stated below) for a period of 20 years, and, what is perhaps most important of all, *they cost less per year of service than any other type.*

20-Year Guaranty

We offer a 20-Year Surety Bond guaranteeing Barrett Specification Roofs of fifty squares or over in all towns of 25,000 population and more, and in smaller places where our Inspection Service is available.

This Surety Bond will be issued by the United States Fidelity & Guaranty Company of Baltimore and will be furnished by us without charge. Our only requirements are that the roofing contractor shall be approved by us and that The Barrett Specification dated May 1, 1916, be strictly followed.

A copy of The Barrett Specification with full information free on request. Address nearest office.

New York
Cleveland
Birmingham
Salt Lake City
Milwaukee
Youngstown

Chicago
Cincinnati
Kansas City
Seattle
Bangor
Toledo

Philadelphia
Pittsburgh
Minneapolis
Peoria
Washington
Columbus

The Barrett Company
Richmond Lairobs Bethlehem
Toronto Winnipeg Vancouver St. John, N. E.

Boston
Detroit
Dallas
Atlanta
Johnstown
Elizabeth
Buffalo

St. Louis
New Orleans
Nashville
Duluth
Lebanon
Buffalo


Baltimore
Halifax, N. S.
Sydney, N. S.

THE BARRETT COMPANY, LIMITED: Montreal

THE AMERICAN ARCHITECT

Late Building Material Prices

(Continued from page 52-A)

GALVANIZED SHEETS		New York	Chicago
Nos. 18 and 20 gauge, per lb.		\$6.12	\$6.12
No. 26		6.42	6.42
No. 27		6.57	6.57

GLASS			
(Discounts from manufacturer's price lists)			
Single strength, A quality, first three brackets.	77%	77%	
Single strength, B quality	77%	77%	
Double strength, A quality	79%	79%	
Double strength, B quality	81%	81%	
Plate—up to 5 sq. ft.	82%	80%	
Plate—over 5 sq. ft.	84%	80%	
Plate—up to 10 sq. ft.	80%	80%	
Plate—over 10 sq. ft.	80%	80%	

GRAVEL			
1½ in. (Borough of Manhattan only), per cu. yd.	\$2.75	\$2.35	
¾ in. (Borough of Manhattan only), per cu. yd.	2.75	2.35	

GYPSUM			
Plaster Board: Delivered at job, Boroughs of Manhattan and Bronx.			
27 x 28 x 1.	35c.		
27 x 48 x ½.	32c.		
32 x 36 x ¾.	21c.	25c.	
32 x 36 x ¾.	21c.	26c.	
32 x 36 x ¾.	23c.		
Plaster Block: Delivered at job, Boroughs of Manhattan and Bronx.			
2 in. solid, per sq. ft.	11c.		
3 in. solid, 12 x 30, per sq. ft.	10½c.		
3 in. hollow	11c.	10c.	
4 in. hollow	12½c.		
6 in. hollow	17½c.		

LATH			
Eastern spruce, per thousand.	\$7.00*		
No. 1 white pine, per thousand.	\$7.50*		
No. 1 hemlock, per thousand.	6.50*		
No. 1 yellow pine, per thousand.	7.00*		

LEAD			
America pig, per lb.	6 to 6½	6½ to 6¾	
Bar, per lb.	7½ to 8½	5½ to 6½	

LIME			
Common, 300 lb. bbls., per bbl.	\$2.50	\$1.40	
Finishing, 300 lb. bbls., per bbl.	3.70		
Hydrated, in paper bags, per ton.	18.50	18.25*	

LUMBER			
(Retail prices per M, delivered.)			
Yellow pine, 2 x 4.	\$65.00	\$52.00*	
Yellow pine, 2 x 6.	65.00	50.00*	
Yellow pine, 4 x 4.	65.00	55.00*	
Yellow pine, 8 x 8.	67.50	60.00*	
Yellow pine, 12 x 12.	75.00	60.00*	
Yellow pine, No. 1 boards, 1 x 6.	75.00	58.00*	
Yellow pine, No. 1 boards, 1 x 12.	80.00	61.00*	
Yellow pine, B and better flooring (plain).	70.00	72.00*	
Yellow pine, B and better flooring (quartered).	100.00*	80.00*	
Douglas fir, 6 x 6 to 12 x 12.	67.50	60.00*	
Douglas fir, 12 x 14 to 14 x 14.	75.00	65.00*	
Norway pine, 2 x 4.	60.00	55.00*	
Norway pine, 2 x 12.	62.00*	62.00*	
Hemlock, 2 x 4.	55.00	52.00*	
Hemlock, 2 x 12.	60.00*	54.00*	
Oak flooring, 13/16 quartered white.	200.00	150.00*	
Oak flooring, 13/16 quartered red.	190.00	143.00*	
Oak flooring, 13/16 plain white.	125.00	100.00*	
Oak flooring, 13/16 plain red.	125.00*	100.00*	
Maple, 1" F. A. S.	84.00*	80.00*	
Basswood, 1" F. A. S.	85.00*	80.00*	
Maple flooring, 13/16 clear.	90.00*	85.00*	
Maple flooring, 13/16 select.	85.00	82.00*	
Maple flooring, 13/16 No. 1 factory.	75.00	62.00*	
Mahogany, 1" F. A. S.	300.00	300.00	
Quartered oak, 1" F. A. S.	200.00*	180.00*	
Plain oak, 1" F. A. S.	130.00*	110.00*	
Red gum, 1" F. A. S.	90.00	90.00*	
Sap gum, 1" F. A. S.	65.00	65.00*	
Chestnut, 1" F. A. S.	90.00	100.00*	
Poplar, 1" F. A. S.	135.00	110.00*	
Birch, 1" F. A. S.	71.00	80.00*	
Spruce, random 2"	60.00*	50.00	
Spruce, wide 8"	65.00	60.00	
Spruce, 10"	70.00*	65.00*	
Spruce, 12"	72.50*	68.00*	

METAL LATH			
Under 100 sq. yd., per sq. yd.	40c.	35c.†	

MORTAR COLORS			
Red, per lb.	.05	.05	
Brown, per lb.	.05	.05	
Chocolate, per lb.	.05	.05	
Black, per lb.	.05	.05	

OILS			
Linseed, city, raw.	\$1.98*	\$2.11*	
Linseed, boiled, advance, per gal.	.01	.02*	
Out of town, American seed, at.	1.98*	2.11*	

PAINTS			
Leads:			
American white, in oil, kegs; lots over 100 lbs.	13c	13c	
White, in oil, 25-lb. tin pails; add to keg price.	¼c.	¼c.	
Red, bbl., ½ bbl. and kegs; lots over 100 lbs.	13c.	14c	
Dry Colors:			
Red Venetian, American, per 100 lbs.	\$2.00 to \$4.50	\$4.10	

Metallic Paints:		New York	Chicago
Brown, per ton.	\$32.00 to \$36.00	\$24.00 to	\$32.00
Red, per ton.	35.00 to 40.00	24.00 to	32.00

PIPE			
Cast Iron:			
6 in. and heavier.	\$50.00†	\$51.80	
4 in.	53.00†	54.80	
3 in.	60.00†	61.80	

(and \$1 additional for Class A and gas pipe.)
(Discounts to jobbers for carload lots on the Pittsburgh basing card; freight rates from Pittsburgh to New York, and also from Pittsburgh to Chicago, in carloads, per 100 lbs., are 27c. An additional 5 per cent discount is allowed to large jobbing interests over those listed below.)

Wrought:			
Steel:			
Black, ½ to 3 in.	Butt Weld	50½ to 57½%	39.6 to 46.6%
Galv., ½ to 3 in.		24 to 44 %	11.6 to 31.6%
Iron:			
Black, ½ to 1½ in.		29½ to 39 %	39½%
Galv., ½ to 1½ in.		2½ to 23½%	23½%
Lap Weld			
Black, 2½ to 6 in.		53½%	42.6%†
Galv., 2½ to 6 in.		41 %	28.6%†
Black, 2½ to 6 in.		34½%	34½%
Galv., 2½ to 6 in.		21½%	21 %

PLASTER			
Neat wall cement in 15 cent bags, per ton.	\$20.30	\$18.50	
Finishing plaster	24.00	21.00	
Lath mortar, in cloth bags, per ton.	15.05		

PUTTY			
In bladders, per 100 lb.		\$4.25†	
In 1-lb. to 5-lb. tins, per 100 lb.	6.75	6.50†	

RADIATION
(A further discount, effective April 4, of 15% on direct radiators, 12½% on wall radiators, and 10% on steam and hot water boilers is announced. This approximates a drop of 36% on radiators and 33% on boilers from prices in effect before the 1st of January, 1919.) Chicago reports a 57% discount on standard heights.

REGISTERS			
Cast iron semi-steel or steel, in black or white japan or electro plate and small faces and borders.	40%	40%	
Wall frames	40%	40%	
Large faced, 14 x 14 in. and larger.	60%	60%	
Base board registers	40%	40%	
Base board intakes	40%	40%	
White enameled goods	15%	15%	
Solid brass or bronze goods, except grilles.	net	net	
Grilles in black and white japan or electroplate in cast iron, plain lattice design—smaller than 14 x 14 in.	40%	40%	
—Less than 14 x 14 in.	60%	60%	

REINFORCING BARS			
High carbon steel from mill.	\$48.50	\$49.50	
Medium steel from mill.	48.50	49.50	

ROOFING MATERIAL			
Tarred Paper:			
1-Ply, per ton.	\$62.00*	\$65.00	
2-Ply	1.05*	1.00	
3-Ply	1.40*	1.40	
Rosin sized sheathing, per ton.	60.00	60.00	
Corrugated roofing, galvanized, 2½ in. corrugation, over flat sheets, 30c. per 100 lbs.			

SAND			
Mason, per cu. yd.	\$1.80	\$2.25	
Torpedo, per cu. yd.	1.80	2.25*	

SHINGLES			
Red cedar, 5 to 2, clear, per thousand.	\$10.75	\$7.00*	
White cedar, extra star, A star, per thousand.	10.00	6.50*	

SLATE ROOFING			
F.O.B. cars, Quarry Station			
Pennsylvania:			
Best Bangor	\$6.50 to \$9.00	\$10.20 to \$11.45	
No. 1 Bangor Ribbon	6.75 to 7.25	9.20 to 9.70	
Pen Argyl	7.25 to 9.00	9.70 to 10.45	
Peach Bottom	10.00 to 12.50	12.45 to 14.45	
No. 1 Chapman	7.25 to 8.25	8.70 to 9.95	
Vermont:			
No. 1 Sea Green	3.50 to 6.75	5.95 to 9.20	
Unfading Green	5.50 to 9.00	8.30 to 11.05	
Red	13.00 to 16.00	14.80 to 22.80	
Maine:			
Brownsville, U'f'g Black, No. 1	10.00 to 12.50	14.10 to 15.10	
Slaters felt, 30 lb. roll.	.92		
Slaters felt, 40 lb. roll.	1.22		

SPIRITS TURPENTINE			
Per bbl.	97	98*	

STONE SCREENINGS			
Lime, per cu. yd.	\$2.35	\$2.35	

STRUCTURAL STEEL			
Beams and channel, 3 to 15 in., per lb.	2.72c.	3.47c.	
Beams and channel, over 15 in., per lb.	2.72c.	3.57c.	
Angles, 3 to 6 in.	2.72c.	3.47c.	
Zees and tees.	2.72c.	3.47c.	
Steel bars, half extras, from mill.	2.35c.	3.37c†	

STUCCO			
In cloth, per ton (white, mixed).		\$21.50	