Los Angeles Planing Mill Co.

The Los Angeles Planing Mill Co. enjoys the double distinction of being a pioneer industry of Southern California and having today one of the most modern plants on the Pacific Coast. The present prosperity of this enterprising Company is due in a large measure to the progressiveness and industry of its president and manager, P. J. McDonald. The concern started out in a very modest way in a small frame building on San Pedro street. That was nineteen years ago. Today the Company has the second largest plant in Los Angeles. It occupies 300 feet front on Industrial street, the main building being two stories high and of brick construction. The Company has over 60,000 square feet of floor space. The equipment includes an up-to-date dry kiln of 50,000 feet capacity. Everything that goes through this machine is guaranteed to be kiln dried. The Company makes a specialty of bank, store and office fixtures and has shipped large orders of goods not only to all points in Southern California as far north as Bakersfield, but to Arizona, New Mexico and Old Mexico. The Company is incorporated for $200,000 of which $120,000 is paid up.

General View of Our Plant

Los Angeles Planing Mill Co.

P. J. McDONALD, PRESIDENT AND MANAGER

WINDOWS, DOORS STAIR WORK

Office, Store and Bank Fixtures

Interior Hardwood Finish and General Mill Work

DEALERS IN GLASS OF ALL KINDS

TELEPHONES
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1812-1830 INDUSTRIAL STREET, LOS ANGELES

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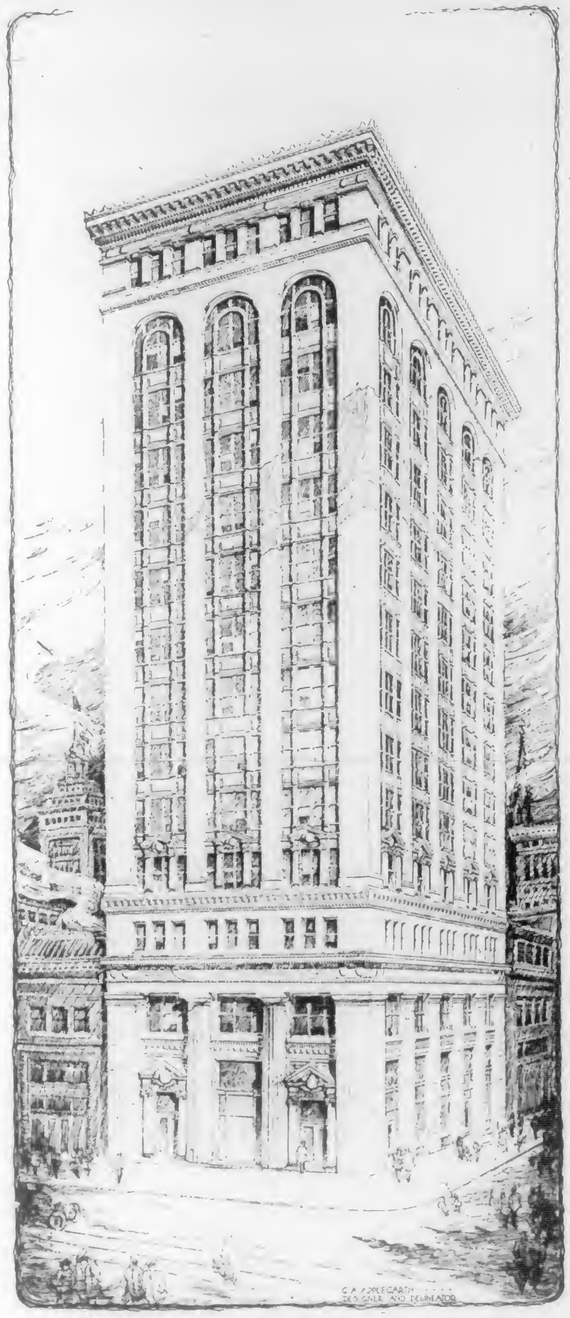
Contents for April



Design for Metropolis Trust and Savings Bank, San Francisco
L. B. Dutton, Architect

Frontispiece, The Architect and Engineer
of California, April, 1907

1-35 Assembly

THE
Architect and Engineer
Of California

VOL. VIII. APRIL, 1907. No. 3.

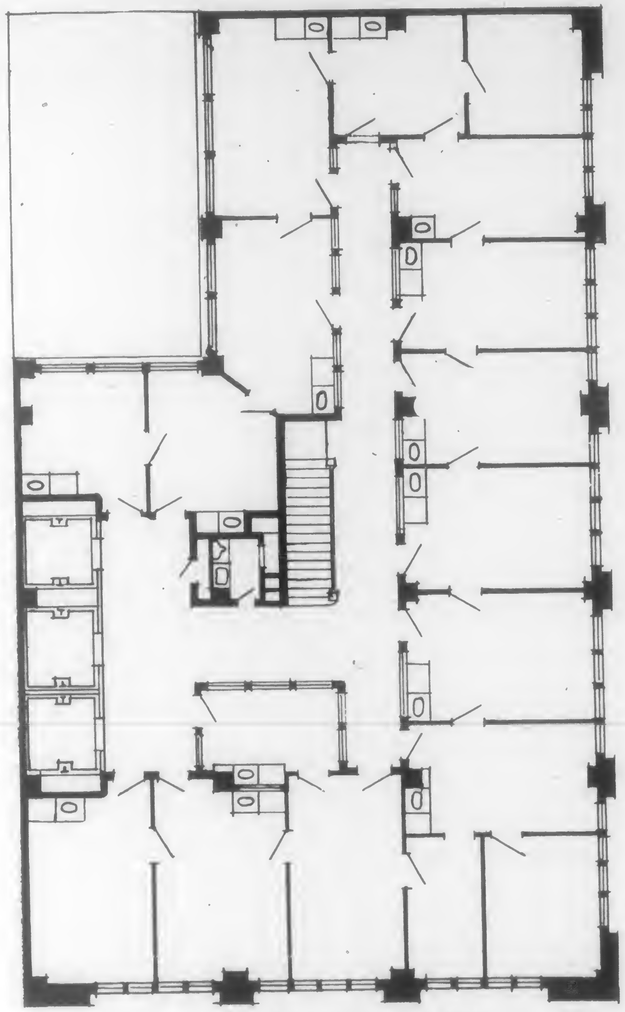
Some Bank and Office Building Designs

AMONG the architects whose work is attracting more than common attention in the rebuilding of San Francisco, is L. B. Dutton, who has designed a half dozen bank and office buildings of recognized merit.

Notable among the list are the Metropolis Trust and Savings Bank, a fourteen story office building to occupy the site of the old Grand Hotel; an eight story office building for the Eyre Investment Company, an eight story building for the Mechanics' Savings Bank and an office building of the same height for the First National Bank of Oakland. A distinctive feature of the Dutton buildings is that they are all designed on simple business lines, yet all present an exceedingly rich appearance, the latter effect being obtained by contrasting the broad, plain surfaces with well placed ornamentation. Glazed terra cotta will be conspicuous in the construction of several of these buildings.

The use of glazed terra cotta for exteriors Mr. Dutton considers the very best possible architectural clothing for steel skeleton frames. It is light; as fire-proof as anything; quickly erected; made complete at a distance from the site and shipped ready to erect; easily and quickly hoisted and handled; more rigidly tied to steel backing than stone or brick work; absolutely impervious to moisture, and therefore impervious to dirt, and easily cleaned of any dust that adheres to the surface, making a finish which can easily be kept in a presentable state at the slight cost of washing it on the exterior once a year. This washing can be done by janitors who clean windows, and involves but a slight expense. This same terra cotta can be had in all colors so that the most beautiful coloring effects may be obtained in a permanent way that leaves no guessing as to the future results, such as the colorings of cement, which is advocated by some.

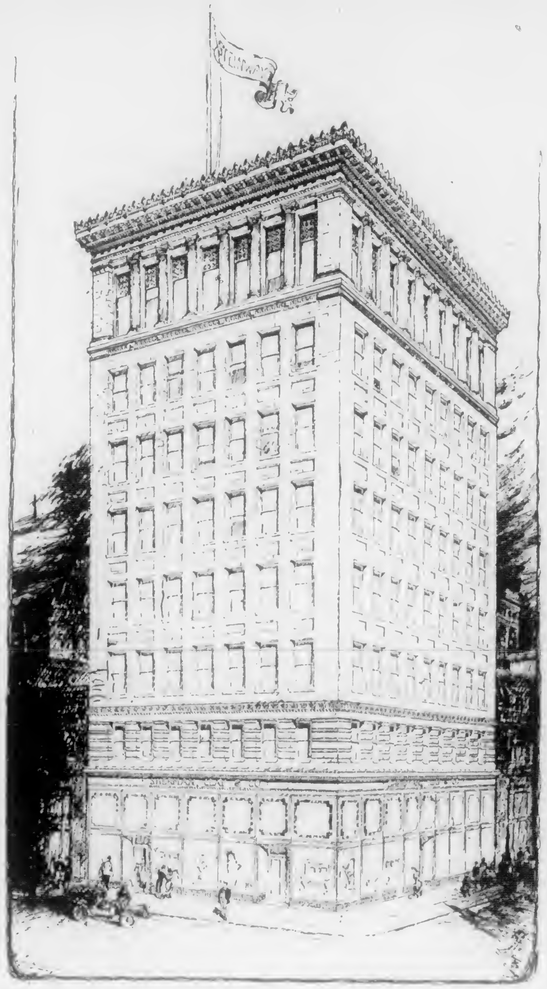
The rapidity with which terra cotta can be installed is one of the greatest recommendations for its increased use. The fact that the very best modelers in the country are employed in executing designs for architectural work increases the pleasure in working this material because after designs and details are carefully made and photographs furnished and models accepted, the architect can rest assured that the results he gets will be what he expected.



Typical Floor Plan. Metropolis Bank. San Francisco
L. B. Dutton. Architect

The Eyre building is located on the southwest corner of Kearny and Sutter streets. It is of mat glazed, cream white terra cotta throughout. The first story is entirely of plate and prism glass without any masonry whatever, the thought being that the super-structure would look more substantial without the usual pipe stem masonry supports installed in front of structural steel columns.

This building is of steel skeleton construction throughout, wind braced by use of double channels placed each side of each column throughout all stories. By this method the unsightly knee braces, which it has been customary to install, are done away with and the strength of this double channel iron construction for wind bracing is ample.



Eight Story Office Building for the Eyre Investment Company. San Francisco
L. B. Dutton. Architect

The floor construction is of reinforced concrete between spans of beams, which are approximately six feet centers.

The concrete for floors and also for the blank walls is made of crushed brick, which forms a most perfect concrete aggregate. The ease with which this aggregate can be shoveled increases the economy resulting from its use, and the results have been so entirely satisfactory, and it is so much more thoroughly fire-proof than stone, that its use will be continued even if the cost of brick aggregate should equal or exceed that of stone.

* * *

Terra cotta would have been used in the Metropolis Bank building, located at the southeast corner of New Montgomery and Market streets, if it had not been the desire to decrease the cost by use of pressed brick.

This building will be constructed of stone for the first three stories, and with pressed brick and terra cotta trimmings for the upper stories.

The effort has been to secure as much light in the offices as possible and the masonry was reduced to the merest skeleton. The increased glass area accomplishes several things: First, it increases the amount of light available for offices; decreases the cost of steel work on account of the additional lightness and decreases the cost of masonry by reducing the quantity, and this in turn decreases the size of the foundations and the amount of excavating for same.

The elevators used in this building will be the Otis Company's Traction Electric. This is the first electric machine manufactured which is capable of running at a high speed, developing between 600 and 700 feet per minute and capable of the same perfect control that is characteristic of the ordinary electric machine. The elevator gates will be double acting and equipped with an automatic device for opening and closing, which is entirely under the will of the operator, and which secures about twenty-five per cent more efficiency for elevator service and at the same time reduces by that amount the time required for trips.

An Ejector System will be used in this building for the purpose of making a deep and attractive basement, which will contain a large safe deposit department. This system works automatically day and night without attention and forms as perfect a means for raising sewerage to a higher level as any known. It is operated entirely by compressed air.

* * *

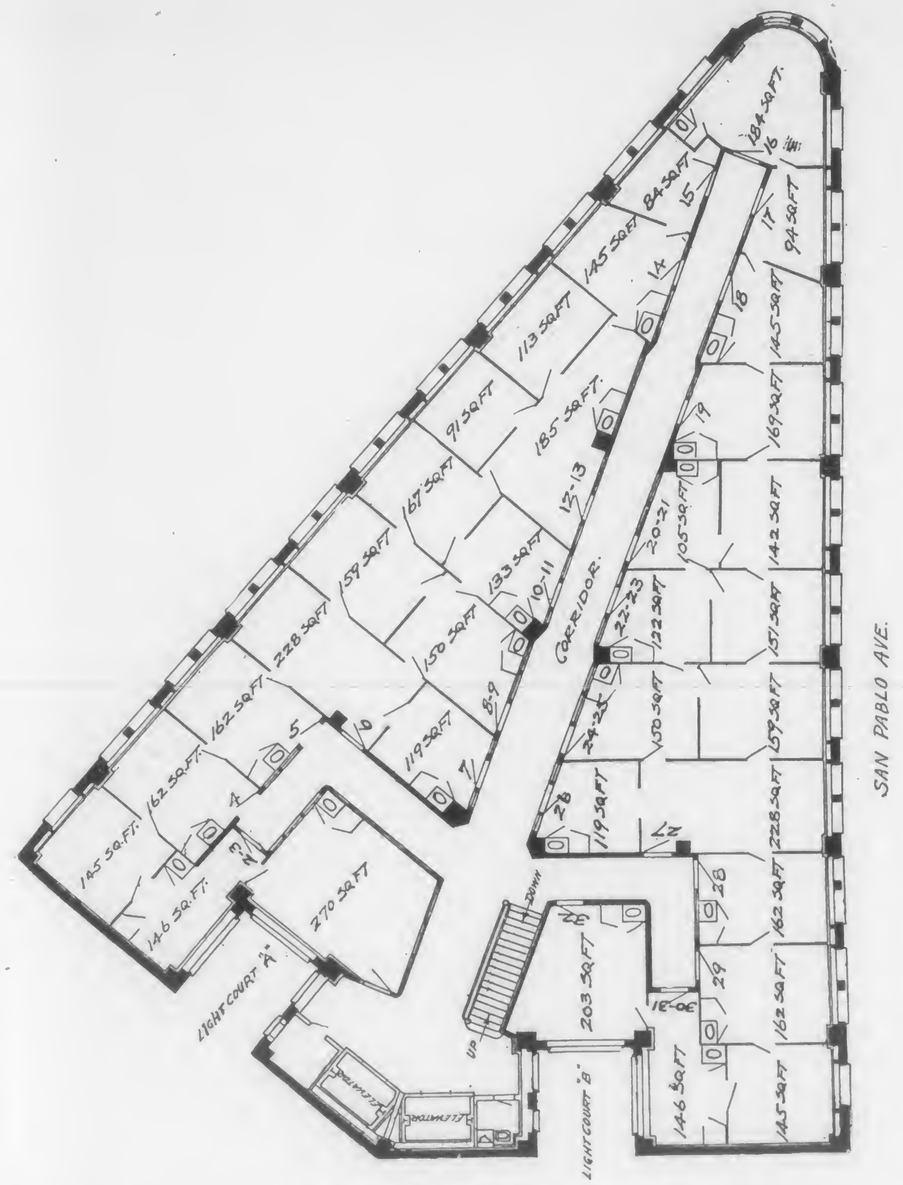
The First National Bank building of Oakland is located at the intersection of San Pablo, Broadway and Fourteenth streets. The first story is of white granite; the upper stories of mat glazed terra cotta. The construction throughout is of reinforced concrete. The first floor will be used exclusively for banking quarters for the First National Bank and for the operation of a safe Deposit Department. The remainder of the building will be for high class tenants. The glazed terra cotta is supported from concrete forms by means of three by four inch shelf angles projecting into it and will be further secured by means of anchors built into the concrete work.

It is the intention to fit up the first story of this building throughout in Mexican onyx selected for uniform tints.

The entrance corridors to this building will be fitted up in the most beautiful marbles inlaid with glass mosaic. In this entranceway will be located a main stairway leading to the upper stories, and a stately double marble stairway leading to the basement of the building. Owing to the location of this building on a gore lot there is an enormous area of sidewalk lights avail-

Front Elevation, Mechanics' Savings Bank, San Francisco
L. B. Dutton, Architect

First National Bank Building, Oakland
L. B. Dutton, Architect



Typical Floor Plan, First National Bank Building, Oakland
L. B. Dutton, Architect

able. This has been taken advantage of in order to beautifully light a very extensive cafe which will occupy the entire basement except the portion reserved for mechanical operations. This cafe will be fitted up in the most modern style, the idea being to surpass any of the latest successful efforts in Eastern cities. The abundant day-light secured in this cafe will make it a very attractive place and dispel any idea of its being located below the ground level. The offices in the upper stories will have most perfect elevator service, equipped with automatic gates operated by compressed air. These elevators will be capable of attaining a high speed and give most efficient service. The corridors will be finished in white marble, and the floors in marble mosaic.

The location of this building on a gore lot gave an opportunity to secure an abundance of light to every office. Metal sash glazed with plate wire glass will be used for all exposed portions of this building. With the idea of securing physicians and dentists as much as possible for the tenancy of this building the offices have all been fitted up with special drains for the use of doctors and dentists with compressed air outlets for all offices; with fuel gas outlets, and with electric power connections making it possible to obtain both 110 and 220 volts; higher voltage up to 500 can be secured by simply making further connections to the high voltage current wires.

The attic of this building was designed to contain steam and water pipes and the storage of valuables. The increased demand for offices in this unusually attractive location lead to the raising of this story sufficient to allow for fitting up of offices throughout the eighth story, which in addition to the outside windows have large skylights giving a vertical light so much desired by many tenants.

The building will be equipped throughout with the most approved air cleaning device, which insures that carpets and rugs will be free from dust, and the building much more sanitary than can be secured by any other means. All the above conveniences for tenants will be furnished free of charge and insure great popularity for this building, so the owners will be able to make a careful choice of desirable and permanent tenants.

The Thompson-Starrett Company is executing the work for this building; also, that for the Eyre building and the First National Bank building of Oakland.

* * *

In the Mechanics' Savings Bank building, located at the northeast corner of Market, Turk and Mason streets, the exterior will be of stone or light glazed brick for first two stories with buff pressed brick and terra cotta above. The glass front in the first story of this building is set back behind the two central columns forming the first story loggia, the idea being to get as large a glass surface as possible exposed to Market street. This building is located on one of the numerous diagonal corners which are so common on Market street. It was thought by eliminating the corner and curving the front that the effect would be similar to a continuous front and much more pleasing to the sight than one with the usual sharp angles. The large columns marking the entrance to the bank will be of cream white marble, slightly marked with darker veinings.

This building will contain an extensive Safe Deposit Department in the basement. The first floor will be used for the bank and two stores, the remainder of the building will be used for office purposes.

The Lindgren-Hicks Company are executing the work.

California Architects and Engineers Inspect Government Works

By OCTAVIUS MORGAN, Architect.

THE Engineers and Architects' Association of Southern California had their annual outing on Saturday, March 9, this time visiting the breakwater and harbor of San Pedro, Wilmington, and Long Beach, they having been invited by Captain Fries, the U. S. Engineer in charge of the work there, to inspect the breakwater and harbor improvements. A party of ninety odd members of the Association, and the members of the Board of Public Works of Los Angeles, boarded an electric car at the Pacific Electric Depot at 1:00 P. M. for the trip to San Pedro.

One of the most notable features of the trip to the ocean was the vast improvement that had been made since our previous trip. At that time from the city to the ocean was a grass covered plain, a simple cattle ranch—five short years ago. Today we speed along on the most complete electric railway in the United States at a speed of forty and fifty miles an hour, through what might be termed a continuous suburb of Los Angeles reaching to Wilmington, some eighteen miles.

In crossing the pile trestles of the bay from Wilmington to San Pedro one could but note the great area of water and mud flats that could be readily made into docks and waterways; hundreds of acres,—yes, thousands. Through San Pedro we went by the side of the wharves and numerous shippings unloading their cargoes, and on through the town into the high ground above the outer harbor site, and on to Point Firmin and its lighthouse, where we stopped for a little while to take in the scene. Fortunately it was an exceedingly bright day, the storm and rain of a few days since having thoroughly cleared the atmosphere. The Island of Catalina, our major breakwater, seemed but a few miles away, stretching its long backbone across the horizon to break the storm and waves that had crossed the mighty Pacific. Looking to the east we had before us a full view of the Sierra Madre Range extending above the clouds, showing the snow-clad peaks of Mt. Lowe, Old Baldy, San Antonio, and the San Bernardino, San Jacinto, and San Diego peaks, the whole sweep of mountains covering a hundred miles in length. Never had there been a grander view of this mountain chain, and between us and the mountains were the green plains and rolling hills, and while these mountains ranged from thirty to seventy-five miles away, yet, as before said, the clearness of the atmosphere made them appear as if a short walk would reach them.

Returning from Point Firmin in our electric car along the bluff to the point from whence our breakwater extended south into the ocean, we made another short stay, taking in a bird's eye view of the breakwater and the new outer harbor site, the piling defining the outlines of the Miner, Huntington, and other dock sites, waterways, and fills for warehouse sites. From here the breakwater takes definite form, the gigantic proportions of the granite walling of the superstructure now being finished about two-thirds, its perfect condition showing its stability and good workmanship after the severe storms of last week, one of the most severe for years. From this point of the bluff note the pile trestles railway track that has been used in the transit of rock from the mainland for the construction of the breakwater, one section of piling had been lifted bodily out of and over the breakwater by the storm, the piling looking like huge jagged teeth just yanked from their seat.

From here we went back to the wharf, taking the steamship Warrior, going

out to and girting the outer harbor, and along the line of the breakwater for a closer inspection of its Cyclopean proportions to the end of the breakwater and around onto the sea face, noting carefully its good shape after its late baptism of storm, thence back to the inner harbor by Dead Man's and Rattlesnake Island to the United States suction dredge, noting the workings of its powerful pumps forcing one cubic yard of material from the bottom every second, and forcing it through about fourteen hundred feet of pipe onto the ocean side of Rattlesnake Island, making land for the site of warehouses and other commercial uses. This spit that was a few yards wide now being broadened to hundreds of yards in width.

From here on we went to the ferry landing and took launches for the inspection of the inner harbor, and up to Wilmington, thence up the so-called Cerritos Slough to Long Beach. We were here joined by a delegation from Long Beach with a double-deck launch and two large launches, taking the whole party of one hundred and twenty. In steaming up the channel toward Wilmington old memories of thirty years ago would come back; thirty years ago in going up this channel on a lighter upon which we landed from the steamboat some two miles at sea and outside the bar, then but two feet deep at low water, now twenty-four feet deep at low water, and looking on either side and seeing the vessels draw from twenty to twenty-four feet of water tied up to the wharves, and thinking that but three days since the old Atlanic Line Steamship "Ohio" had laid beside the wharf and pulled out with a good crowd of excursionists to Honolulu, and, looking at the area of mud flats and water around us, and remembering the good work being done by the suction dredge we had just left, and knowing the favorable bottom for the use of the suction dredge, and the good use that would be made by the materials taken up by it, the possibilities of the future of this harbor were almost beyond conception; Glasgow, Liverpool, Antwerp, all appeared before us, and when we think of the great population that shortly must fill this glorious Southern California, and the knowledge of the low passes through our mountains, through which must come the many overland railways, a mighty commercial mart must surely be the future of this place.

Leaving Wilmington we go up the Cerritos Slough, which is really the joint San Gabriel and Los Angeles River outlet to the ocean, surprise after surprise met us all as we go steaming up to Long Beach, knowing the ease with which the suction dredge can widen this channel. About two miles up we come to the charred remains of the suction dredge of the Long Beach Harbor Company, which was destroyed by fire some thirty days since. We note the large area excavated by them and the great fill that has been made on the mud flat around, bring acres and acres of the mud flats six feet above the highest tide level, giving basins and waterways for the shipping, and sites for warehouses and industrial plants. We now come to a large clam-shell dredger in full operation that has taken the place of the suction dredger until such time as the new one can be placed in operation. The feasibility and practicability of this industrial harbor enterprise at Long Beach is fully shown, and when the cooperation of the Salt Lake Railway enables them to straighten and deepen their channel to the Wilmington outlet, its success as a commercial industrial harbor is assured, the material dredged from the harbor and channel enabling the raising of all the mud flats to fit them for warehouse and factory sites of all sorts. There will be some three hundred acres for sites for warehouses and industrial plants, and, should serious objections develop in the straightening of the harbor to Wilmington, then the direct outlet to the ocean can be used as a short cut, the War Department having ordered the Salt Lake Railroad to put in proper drawbridges, that navigation shall not be obstructed.

We now come to the end of navigation at the foot of Third street, where we find many automobiles sent out by the Long Beach people, ready to take us to the center of the town, the street railway, however, going right to this point, but the Long Beach people, always doing the right thing, had provided the more speedy automobiles. When we arrived at the center of the town we found a committee to meet us, going to the large hall where, previous to being called to dinner, Captain Fries outlined the proposed scheme submitted to the War Department for the further improvement of the inner harbor of Wilmington and Long Beach, and its connection with Long Beach, illustrating the scheme with large maps, and giving a synopsis of the work done and proposed to be done, which is given in detail hereafter.

When Captain Fries was through with his talk, we were taken by a Committee of the Long Beach Chamber of Commerce to the dining hall, where the most generous spread awaited us, and, while Long Beach has always had the reputation of being a good "glad-hander", yet, we hardly expected such a hearty welcome as this. It was a dinner, and we had the proper sauce to give us an appetite for it. Our trip around the breakwater and harbor had prepared us to do justice to the good things before us.

After many pleasant speeches of welcome from the Long Beach Chamber of Commerce, the Mayor, and other leading citizens, the President of the Association, Mr. Lippencott, heartily responded, and Mr. Eisen congratulated Long Beach on the possibilities of the future of their city and their harbor, their great enterprise and courage, and that with the examples of Antwerp, Bremen, and the great docks at the mouth of the Thames, as a promise of what the future might have in store for them, that they were justified in all that they had undertaken and might promise.

It was unanimously conceded that this had been the most successful excursion made by the Association, and that the Long Beach Chamber of Commerce and representative citizens had made the day enjoyable by their generous and bountiful feast.

Captain Fries addressed the Association and gave the following information as to the improvements and proposed improvements of the San Pedro and Wilmington harbor:

HARBOR NOTES

Breakwater:

Cost, $2,900,000.
Proposed length, 9000 feet.
Westerly arm, 3000 feet long.
Easterly arm, 4200 feet long.
Curve connecting arms, 1800 feet long.
Radius of curve, 1900 feet = 3° curve.
Gap, breakwater to shore, 1800 feet.
Trestle built and owned by contractor.

The breakwater is built in water from 24 to 52 feet deep, over 7000 feet of it being in depth of 40 feet or more. The 30-foot contour is about 3000 feet inside and nearly parallel with the breakwater. Area having more than 30 feet at low tide protected by breakwater from southeast or more westerly storms, 360 acres.

It is estimated that it will take 130,000 tons of random rubble stone to connect the breakwater with shore. It is not thought necessary to extend the course walls shoreward from end of breakwater proper.

Substructure:—(Portion below mean lower low water.)

Top width, 38 feet. A berme 4 feet wide has been added on the harbor side.

Ocean slope—from M. L. L. W. to depth of 12 feet, one vertical to 3 horizontal—below 12-foot depth natural slope (about one vertical to 1.3 horizontal).

Harbor slope—natural slope (1 on 1.3).
Width at depth of 50 feet, 195 feet.
Stone deposited to March 1st, 2,052,156 tons (2240 lbs.).
Total (estimated) when completed, 225,000 tons.
Practically completed, 8452 feet (78% completed).
Price per ton, $0.844.

Chatsworth Park sandstone allowed in core; covered by granite from Declez of Casa Blanca (near Riverside).

Stone from 100 lbs. to 15 tons in size.

Superstructure:—(Portion above M. L. L. W.)

Top width, 20 feet.

Bottom width, 38 feet. Height, 14 feet above M. L. L. W.

Ocean wall in 4 courses—no stone less than 16,000 lbs.

Harbor wall in 7 courses—no stone less than 8000 lbs.

Stone deposited to March 1st, 148,592 tons (2240 lbs.).

Total (estimated) when completed, 248,180 tons.

Superstructure partially built between points 628 feet and 7245 feet from westerly end, equivalent to 5984 feet of completed wall (66% completed).

Price per ton, $3.10.

Concrete:

Monolithic blocks 40 feet square and 20 feet high are to be built at each end.

Price, $6 per cubic yard.

Inner Harbor:

The jetties forming the entrance to the inner harbor, were built between 1871 and 1893. The original depth of water at entrance was about 2 feet at M. L. L. W. This was increased by scour and dredging to 15.5 feet. Cost of jetties and dredging, $954,497.

The entrance channel is now dredged to depth of 21 feet, and is 400 feet wide. Beginning at a point 4000 feet from the center of Deadman's Island, the harbor is dredged between wharves to a depth of 25 feet at low tide. This portion of the inner harbor is 4500 feet long, and varies in width from 500 feet at lower end to 750 feet at upper end. There is now available 9000 feet of wharves with 25 feet depth at low water and this will be increased to about 11,500 feet by July 1st.

Sufficient money has been appropriated to complete dredging the inner harbor to 25 feet, from a point about 4000 feet above the center of Deadman's Island up to and including the turning basin.

Dredge "San Pedro":

The U. S. dredge "San Pedro" has 20-inch suction and discharge pipes, with 8-inch hydraulic pump direct connected to 600-H. P. triple expansion marine engine. When discharging through 1800 feet of pipe with engines developing about 500-H. P., a mean velocity of 12.6 feet is maintained at the discharge. The discharge is about 28 cubic feet per second.

The dredge cost $98,000. Built by the Ellicott Machine Co. The remainder of the plant, consisting of pontoons, pipes, launch, etc., cost about $20,000 more.

The dredge up to March 1, 1907, had removed 1,438,024 cubic yards. The amount still to be removed, nearly all of which is in the turning basin, is approximately 2,304,500 yards.

The actual cost of dredging to date, exclusive of the first cost of dredge, has been about 8½ cents per yard. It is estimated that the complete dredging (3,754,500 cubic yards) will cost about 11½ cents per yard, including original cost of dredge, maintenance and repairs.

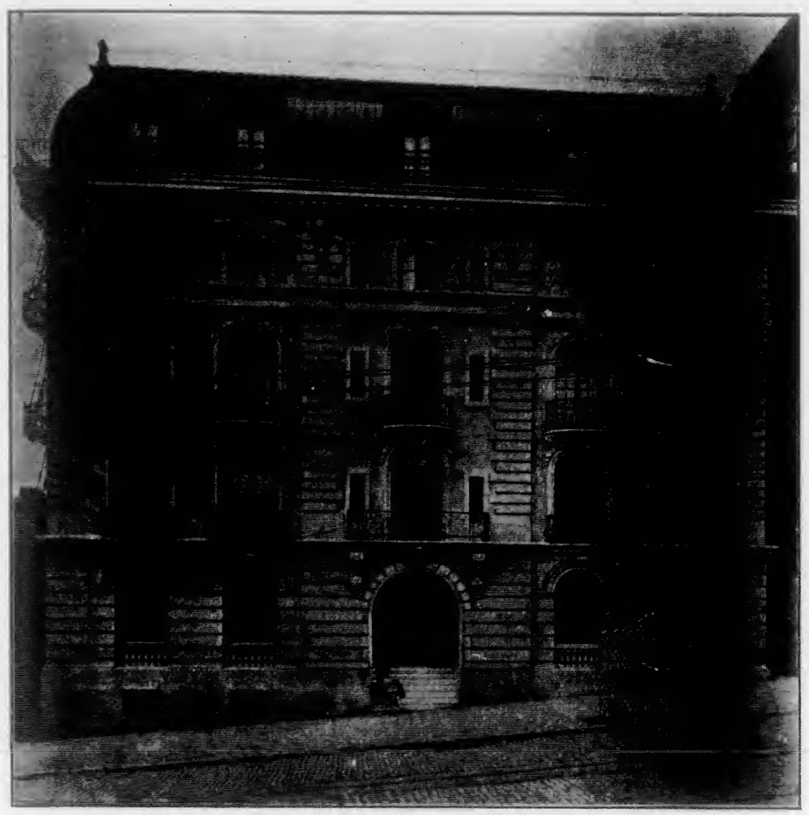
To deepen the inner harbor, including turning basin and entrance channel 400 feet wide, to 30 feet at low tide through its entire length it is estimated will cost not to exceed $570,000. The amount of material to be removed is 3,000,000 cubic yards, of which only a little more than one-half is in that portion of the harbor being dredged to 25 feet. This estimated cost includes the construction of another dredge similar to the one now in use.

To dredge the inner harbor above the turning basin and east of the Southern Pacific Railroad tracks (known as the East Basin) to a depth of 25 feet below M. L. L. W., in accordance with plan now proposed by this office, will require the removal of about 14,450,000 yards of material.

To dredge the West Basin, or that portion west of the railroad tracks, exclusive of slips, to a depth of 25 feet below M. L. L. W. will require the dredging of about 8,350,000 yards.

The water frontage in the East Basin, excluding slips and entrances thereto, is 30,800 feet, and in the West Basin, 19,200 feet. Additional frontage afforded by proposed slips: East Basin, 37,800 feet; West Basin, 42,000 feet. Water area, exclusive of slips: East Basin, 332 acres; West Basin, 206 acres.

Distance from the entrance to inner harbor near Deadman's Island to upper end of turning basin, 11,400 feet, or approximately 2 1-6 miles; from upper end of turning basin to southeasterly corner of East Basin, 8400 feet, or approximately 1 2-3 miles; from the southeasterly corner of the East Basin to Long Beach harbor, on a direct line, about 7000 feet, or nearly 2 1-3 miles; making distance from entrance to inner harbor at San Pedro to Long Beach harbor about 5 1-6 miles.



Apartment Hotel, Pine Street, San Francisco
Sutton & Weeks, Architects

The Apartment House of San Francisco Renaissance

By CHARLES PETER WEEKS, Architect

LONG ago the apartment house came to be an established form of life, following hotel life, as a compromise between it and home life, and combining advantages of both—advantages of economy on the one hand and privacy on the other.

The apartment house had reached a very high development in San Francisco before the fire; had reached such numbers that it had come to be a doubtful good investment.

They occupied, scattered here and there, that entire district as far west of Stockton street as Van Ness avenue, and north of Market to Nob Hill. Today this same district is being rebuilt in the same manner, but in addition, many of the down town residences are being replaced by apartment houses. In fact the future indications are that all of the down town hillside district will be covered with apartment houses, and the

Hotel for Mr. H. H. Larsen, Bush and Powell Streets, San Francisco
Sutton & Weeks, Architects

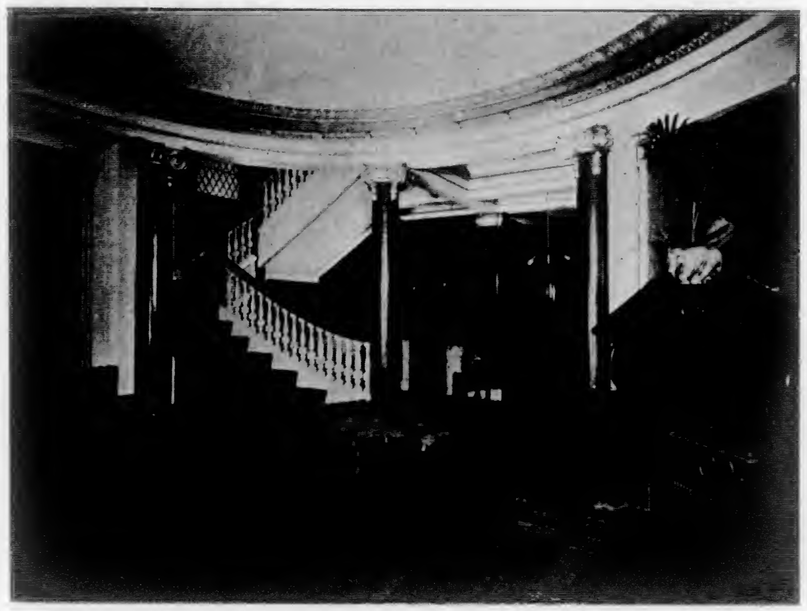
more level parts outside of the strictly business district, with lodging houses and rooming hotels.

West of Van Ness avenue flats will continue to replace residences as they did before the fire, slowly driving them into more remote locations, as early elemental civilization has always been driven out by more economical and complex social arrangements.

Even "the man who can afford" is beginning to limit his "home" to the country, and when in town takes an apartment or goes to a hotel.

The modern apartment consists of three or four rooms, economy again being the motive. There is the living room and the dining-room combined, a kitchen, a bedroom and bath, or two bedrooms; although the latest develop-

Entrance Hall, Apartment Hotel
Sutton & Weeks, Architects



Entrance Hall, Apartment Hotel, Pine Street, San Francisco
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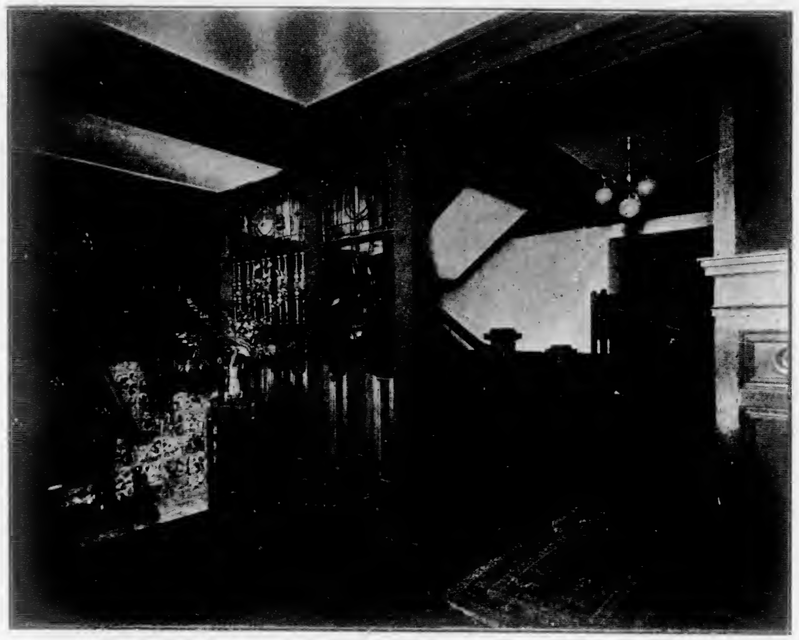

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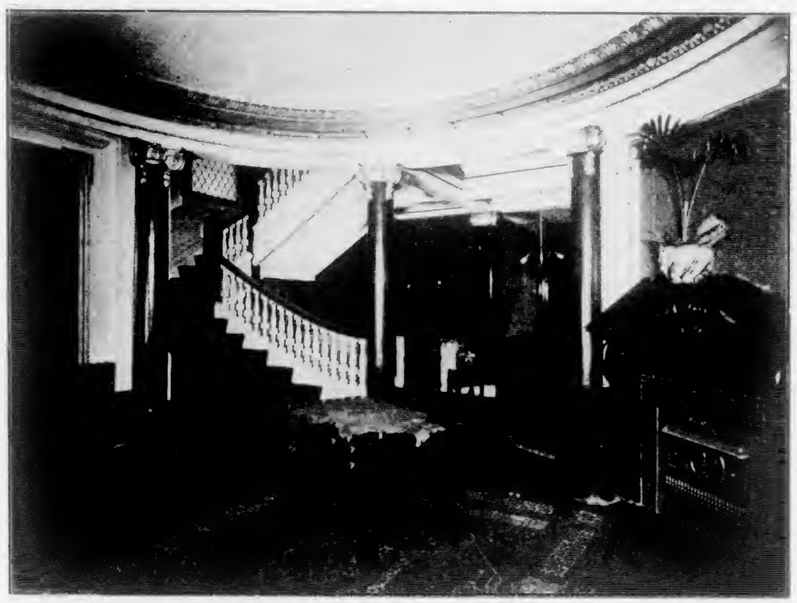
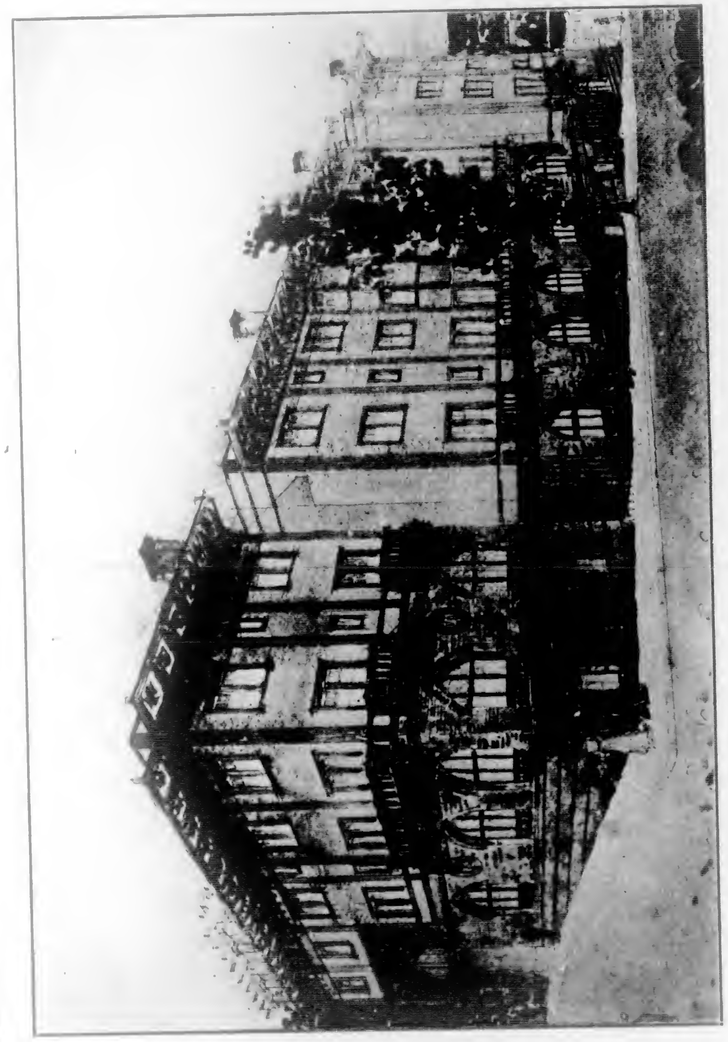


Entrance Hall, Apartment Hotel, Pine Street, San Francisco
Sutton & Weeks, Architects



Apartment House in Half Timber, Plaster and Brick, San Francisco
Sutton & Weeks, Architects

Entrance Hall, Apartment House
Sutton & Weeks, Architects

ment in New York is where several families combine to build one building, each taking a story and arranging it to suit his own needs and tastes, a common kitchen and corps of help serving all. Each apartment has its own pantry with dumb waiter, from which the apartment is served, the first story consisting of kitchen, banquet hall, garage, servants' quarters, etc. Wealth makes this a very feasible scheme.

San Franciscans up to the present time have preferred to build a home with their wealth, but I predict that in future many of our rich families will adopt the New York mode of life.

The apartment houses now being built in San Francisco are all of the Class C or wooden type, and are cheaper than fire-proof buildings even at the exorbitantly high price of lumber.

These same high prices are keeping many investors from building, hoping that the future will improve these conditions. The same demand and lack of supply that made California forefathers pay $10 for a loaf of bread, is causing these present high prices. Want forced the forefather to pay and necessity will force San Francisco to pay. But on the other hand the income to an extent justifies the larger expenditure.

San Francisco is crowded with new building companies and new contractors. The local building contractors deplore this, but it is to be a great benefit to the city if the local men will only learn the lesson being taught. The systematic way of handling a large job, the speed attained, the new manner of doing work, should be watched, studied, learned and repeated.

Apartment House in Half Timber, Plaster and Brick: San Francisco
Sutton & Weeks, Architects

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Apartment Hotel in Brick and Plaster, San Francisco
Sutton & Weeks, Architects

In the same way, Eastern architects are taking much work from the local men and this will be a benefit in the end. It will serve to raise the standard of architecture in San Francisco and those who survive the fight will be worthy to represent San Francisco in the architectural world and make her a recognized power second to none.

San Francisco's architectural past is that of a provincial city; her future is that of a metropolis.

Terra Cotta and Brick

What Constitutes a First-Class Paving Brick*

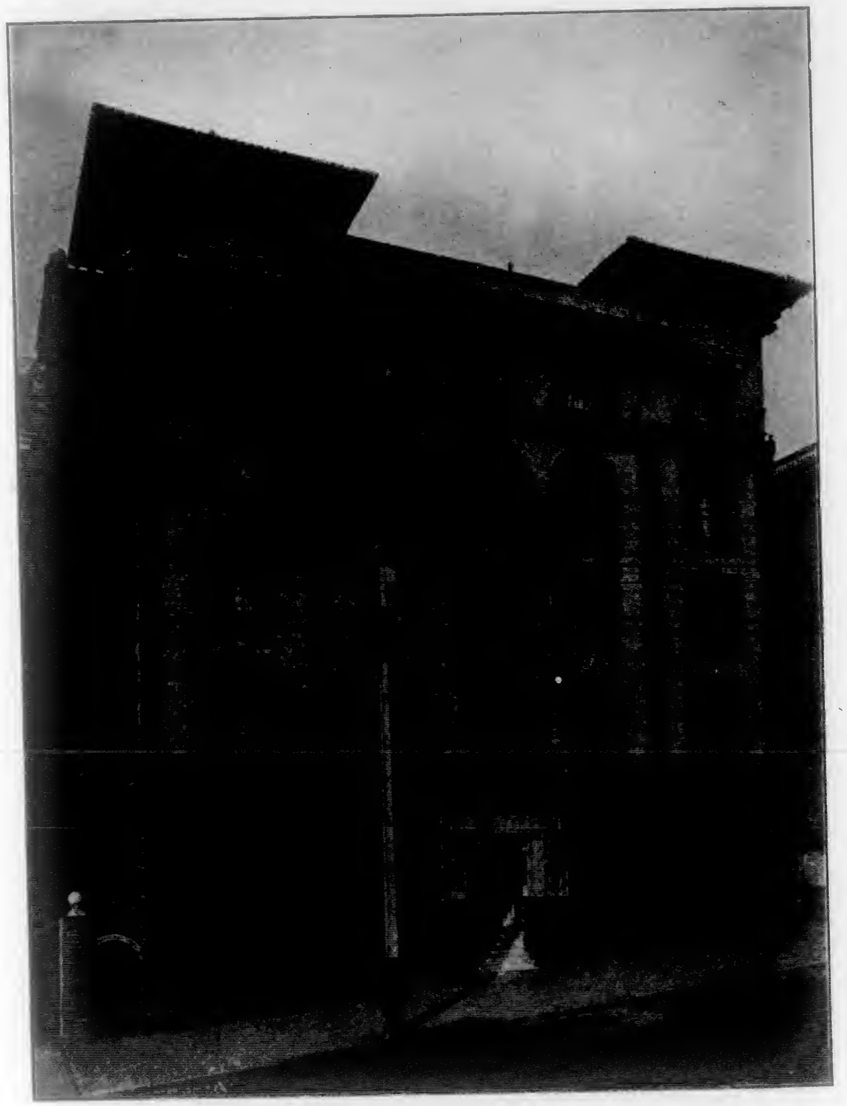
By WILL P. BLAIR

President of the National Paving Brick Manufacturers' Association

THE first pavement made with brick that I had the pleasure of seeing in process of construction in a roadway was witnessed by me a good many years ago. The brick were dumped from a wagon as you would dump a load of gravel. That does not seem so long ago, but rather yesterday—since upon yesterday, as it were, whole streets have been paved without a pretense of an engineer's services, and are practically dumped into a street, and even now it is not an unusual thing for brick streets to be built without the superintendency of an engineer. The services of an engineer was not thought necessary, and so not thought of at all in building the first brick streets in Illinois. For the same reason, and no better reason, the services of the engineer have been dispensed with time and time again, because it was not thought worth while. His skill and wages for the time seems to be thought of as being out of proportion for the importance of the job. A dollar and one-half to two dollars a day so-called inspector is often deemed sufficient pay, and such a person regarded as being fit for an inspector on streets for the same reasons that the boy could so highly recommended his dog, not being fit for anything else, he knew he was a good coon dog. Just why the public endures being trifled with in this respect is difficult of solution. It is a method that has grown into a practice for the reason that sufficient protest has not been lodged to remedy the evil.

A mile of brick street 36 feet wide costs, with the curbing, $40,000. It not unfrequently happens that cities and towns from twelve to twenty-five thousand inhabitants build two miles of streets in a single season, and $80,000 is expended practically under the supervision of the two dollar a day man. I ask what would be thought of your citizen neighbor who having determined to build a $40,000 residence, would do so without the aid and services of a most competent architect constantly superintending the job. No one knows better than gentlemen of the engineering profession that more money is wasted upon streets and roadways through incompetent superintendency than that of any public utility for which money is expended, and no one else than you feels more keenly upon the subject than the material man whose product is thus abused. So far as the brick manufacturers are concerned, I think I may say without the least degree of hesitancy that

*Extracts from paper read at the Twenty-ninth Annual Meeting of the Illinois Clay Workers' Association



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they not only stand willing, but determined so far as lies within their power, that the engineer shall supervise the construction of the work for which he draws the plans and receives the pay for such supervision for which his ability entitles him.

An architect's fee for superintending a $40,000 building would certainly be as much as three and oftentimes is as much as five per cent of its cost. In this day and age of the world, even a modest home is without its complement and necessary appurtenance when it is without a street, at least, in keeping with that home. The beauty, the utility, the comfort and durability from every point of consideration is as important in one case as in the other, and deserves equal care and attention. The interest of the vitrified brick manufacturer in the use of their product is co-equal with that of the engineer or property owner. We earnestly desire the co-operation and help of both, and we are willing at all times in recognition of that fact to help the cause of the engineer with all of the influence at our command. If professional ethics would bid them be modest, our material welfare is ready to supply the necessary obstrusiveness to set aside the practice that contributes to bad work, and put them where they belong. We only need to be taken into their confidence and quietly directed in the things which we may do, and I plainly confess that we do not wish the relationship to stop there. We desire to take them into our confidence. With the incompetent inspector we have our troubles. We do not know whether he really thinks us dishonest, or whether he does not consider it as a part of his duty to consider us dishonest or which, but do you think that we can take such a man on to our yard, explain our methods of burning; demonstrate where the good and the bad brick comes from in the kiln, where our own troubles lie, and of all the efforts that we put forth and as we put them forth to give to the cities the quality of the brick we have promised to furnish. We are not satisfied, however, with eliminating the incompetent inspector. Boards of trustees, city councils often so circumscribe the engineer in a way that he is not the responsible factor he should be; the final judgment and authority of the engineer is not supreme, but reserved by a body that possesses no element of technical learning—a doctor is called and describes, but some wiser council (?) determines whether or not the patient shall take the medicine. The authority of the engineer should be made supreme to make him forceful and independent. After an engineer's plans are accepted and approved, then he should be clothed with absolute power and authority to carry them out in detail. Where the engineer is given full control of the plan, specification and details of construction, the material with which it is to be done, we do believe that it would be to the interest to all concerned that the engineer visit the yard and the factory from which the brick are supplied; see the brick as they are made, as they are burned, assorted and shipped, where the overburned come from, and note the characteristics; likewise the underburned, the airchecked, the faulty made at the machine, the spoiled at rapid firing and of all the little details that separate the good from the bad.

As they gather some little information from us along these lines at such conference, we necessarily would learn a great deal from them.

What constitutes a first class paving brick is a question that can not well be answered in a few words. You are all well aware that we are wont to say and do say that a paving brick that will withstand the action of the rattler and not sustain a loss of exceeding twenty-five per cent, and one that will not absorb but from two to five per cent of its own weight is a good paving brick, but when you ascertain the quality of a brick by

that process of testing, the brick itself is no longer fit for use. Then the test itself is only practical so far as it may serve by way of comparison to enable intelligent judgment to be passed upon similar brick that are expected to be used. I have before me some half dozen or more samples of first class brick of the various makes that seek a market in your state. I would say that all of these brick are first class, and meet the general requirements, and after placed in the streets of the cities and towns of the state of Illinois, under what we call good construction, it would be a rare exception where they will not withstand the wear and tear of an entire generation. I have before me here also an overburned brick, and underburned brick, a brick that is burned too fast, a brick that is spoiled in the mill, and brick that are otherwise defective, each having been manufactured by the same process; burned in the same kilns; of the same material and apparently received the same treatment as the brick that are good. The comparisons that I have here are each somewhat in the extreme. I believe it was your own immortal Lincoln who said that the way to learn most effectively by illustration and comparisons is by instancing extreme cases, and that is why I have brought these extremes to you. It does not require much stretch of the imagination for you to realize that there is a point where these two extremes meet, and it is the case with every manufacturer that between the good and bad there is a doubtful line. I think that you will find that it is the method of every first class manufacturer in giving instruction to his men upon whom he must depend to fill his orders that the doubtful line must be eliminated in favor of a good grade. If there is a doubtful line where these two qualities meet with the manufacturer with all his familiarity with the details, conditions and circumstances surrounding the making of the product, what can be expected in the exercise of the judgment of a man such as I have stated while acting as an inspector. This is the aspect that presents itself for your and our intelligent consideration, and this is the condition that led me to say, and is the father of the wish, that the engineers might be taken into our confidence and we into their confidence, and that is why I say to you that a visit to the factory of the manufacturer who supplies the brick that the engineer is expected to use upon any important street, will be to the decided advantage of both. In some cases it is largely the place of the kiln where the different grades come from. Again the quality may be determined somewhat by the color and, as is sometimes the case, by the weight alone, mill insufficiently fed, quantity of clay lacking inside of the brick, the outside appearance perfect in form and perfect in burning. In the latter case the fault of the brick is only detected after it is placed in the street and subjected to the weight of the roller. But no two brick of the entire lot before me are of the same color, nor do any two present the same appearance so far as fracture, density, burning, or anything else as it appears to the eye make the two alike. Each is totally different, and made from slightly different clays. A visit to one yard will not equip one thoroughly in judging the quality of the brick from another yard, so I would say if it is possible, as each factory supplies a street from time to time, visit each factory, inspect the yard from which the particular supply of brick are to come.

I have with me also two or three specimens of first class brick that have been in use. One specimen taken from under the wheel track, having been in use a little more than fifteen years. This specimen of brick is similar in quality to the No. 1's that I have before me, but it was placed in the street under proper construction. I have a corresponding sample

precisely alike in quality, but placed in the street carelessly and not in accordance with the plans and specifications we recommend. The wear on the two specimens were as nearly alike as it is possible for conditions to be in two different places on the same street; both were from under the wheel track, but you readily see one is a total wreck, while the other is not preceptibly worn. I have another specimen taken from another street that was in use 12 years, sustaining the traffic under heavy loads daily, and in that entire time many loads that passed over it weighed more than 12 tons. I was unable to procure a mate for this sample—construction under bad conditions—for the reason that on the entire block from which this was taken, no more apparent wear was found anywhere. These brick we furnish in proof of the statement often made, that the older the brick street, in case of proper construction, the better it is for all purposes for which it is built. Bridges collapse, buildings fall, streets fail. There are failures in all engineering problems, but almost without a single exception the failure is due to misconstruction or a misapplication carelessly or otherwise of the plans and specifications made by the engineer. You ask me, why this special plea for competent supervision? I think I have already given you the answer. What constitutes a good paving brick is one that is properly laid in the streets.

* * *

San Francisco in Ten Years

ROSY pictures of San Francisco as it will appear ten years in the future were painted recently by Willis Polk, who has charge of $4,000,000 worth of reconstruction work there for D. H. Burnham & Co. A population of 1,000,000, more beautiful buildings, better streets and parks, more adequate fire protection, a pure water supply—these are but some of the things included in his prophecy. He adds to these the assertion that the city will manufacture and ship more goods by that time than would have been its portion in all time had not the earthquake come to change its history.

Mr. Polk is a member of the "committee of forty," all that is left of the now famous "Committee of Fifty," which, under the direction of Mayor Schmitz and General Funston, met within three hours after the great disaster and drafted a set of drastic emergency laws for the government of the frightened people of the stricken city.

"What the Chicago fire did for that city the San Francisco earthquake and fire did for the coast city," said Mr. Polk. "Figuring that $300,000,000 worth of buildings were destroyed in the conflagration, all of which will have to be replaced, and that it will take an expenditure of $200,000,000 more to meet the great demand for new buildings and improvements, I estimate that it will take ten years to obliterate all traces of the fire. This will mean an expenditure of approximately $50,000,000 every year in building alone.

"The permanent building has begun, plans have been made for approximately $20,000,000 worth of buildings to be constructed within the next few months. Many of the temporary shacks have been destroyed.

"That reminds me that the people in the East greatly misapprehend the effects of the earthquake. It was found in all but two per cent of the cases examined that wherever a building had a good foundation, and was properly built, it suffered nothing from the quake. For a time there was a decided 'boom' in reinforced concrete construction, but the effects have all worn off now. All the large contractors have returned to the old legitimate steel-frame properly protected buildings."—Building Management.

Artistic Brickwork*

By J. M. WHITE

Dean of the College of Engineering, University of Illinois

I HAVE selected the above subject because I feel that you must all be interested in promoting a truer appreciation of the artistic possibilities of brick masonry. You have made good brick, the best that can be found in any market and in ample variety of size and color; your next duty is to see that people are taught how to use them to the best advantage. Many of our architects, almost the entire public, the majority of the masons, and even the brick manufacturers, need to be educated on this point. The public does not realize at how slight an expense a monotonous brick wall might, by a variation in texture or color of the material, have been made interesting if not really attractive.

Brick is regarded as a cheap material and it therefore receives a cheap treatment. Its strength, durability and fireproof qualities are recognized, but attempts at artistic effects, except with pressed brick, are looked upon as questionable experiments.

We can improve conditions only by educating people all along the line. The architect, who would be the most important factor in raising the standard of public tastes, receives plenty of encouragement from the manufacturers and artists, who create, but scant co-operation from the mechanics who must execute the work. It is for just this reason that the aesthetic standard of modern brickwork is so much lower in the United States than in England, France and Germany. Many architects have given up in despair and accepted work which stands the test of the line and plumb and is "free from solecisms and mistakes, but in which all the virtues are negative and which is devoid of character and life."

The receptivity of the mechanic is a force which has much to do with the general development. The mason's sole ambition is to cultivate dexterity, and it is usually done at a sacrifice to those effects which, though largely accidental, are expressive of his artistic sense in selecting and grouping the individual bricks.

I have often wished that the Masons' Union, in order to stimulate pride in artistic as well as mechanical excellence, would establish an Honorary Order of Craftsmen, a sort of first degree, to which no one would be admitted who did not appreciate the artistic side of his work. Among the older civilizations of the world, I presume that a large majority of the mechanics would be included in such a class. "Education, like the mass of our age's inventions, is, after all, only a tool; everything depends upon the workman who uses it."

Artistic effects can not be obtained by rule, and though we hear it said that designs must always be related to the material in which they are executed, that we must always bear in mind the capacity for appropriate expression of the material with which we are working, that we must use it in a proper manner and keep it in its natural sphere, bearing constantly in mind its possibilities and its limitations, we do not feel much wiser as to our own method of procedure, even though we recognize that there is truth in the statements.

It is true that stone is better suited than brick for monumental buildings built upon large lines and employing heavy masses of material. The natural use of wood is for work that employs the stick straight, though more or less carved and ornamental. Metal is susceptible of twisting and bending and hence is the natural material to employ where such effects are desired. Glass in its finished state should express the lightness of a bubble and is more appropriate when blown into light feathery shapes than in the form of cut glass.

It is easy to enumerate some things we should not do, but difficult to say where to draw the line. Some excellent architects will not use either pattern brickwork or moulded brick. Personally, I admire both in their proper places.

*Extracts from paper read before the Convention of the National Brick Manufacturers' Association, held at St. Louis, Mo., February, 1907.

The Brick Situation in San Francisco

THE brick men say they just cannot keep up with orders. The demand would not exceed the output under ordinary conditions, but there are several reasons to account for the present inability of the manufacturers to supply the market. Besides the unprecedented call for brick occasioned by the rebuilding operations, the dealers have been handicapped by shortages of fuel oil, coal and wood, and absence of even fair transportation facilities. Prices have advanced, but expenses of every kind, including labor, fuel, freight on brick and cartage in the city have increased considerably.

The soft mud brick plants in the Standard Brick Association have been closed since November, as usual, and the extremely rainy reason detained all of them from making an early start this year and taking a chance in order to secure some of the big orders that are in sight. They usually resume molding brick about April 15th.

The present difficulties in the way of transportation would probably prevent successful delivery of greater quantities of brick to the builders in the near future anyhow. The San Francisco wharves are so clogged up with lumber and other bulky stuff that the brick men are unable to find a place to lay their bricks after they have brought them to the city in scows or other vessels. There are a few exceptions, but storage space is very hard to find.

The mud brick yards have been burning brick during the rainy season that were made in the fall and stored in sheds. Many of the yards have large quantities of brick on hand, largely sold, which they cannot get transportation for, and hence the owners are not very enthusiastic over rushing the business. On April 1st, 500 carloads of brick were on the Southern Pacific railroad in the fifty miles between San Jose and San Francisco. Some of the cars were loaded two weeks prior, but the contractors who bought the brick could not get them. The Remillard Brick Company's yard at Pleasanton is choked up with burned brick on account of lack of transportation. Its yard at Greenbrae is closed down for lack of wood for fuel.

Prices of common brick have advanced to $12.50 a thousand and some are holding for $1 more. Considerable quantities of brick have been sold at the figure mentioned. However, a large concern that manufactures brick in Sacramento and has 30,000,000 brick sold, got $10 for the greater portion when the orders were taken. A year ago, common bricks were sold as low as $6, but expenses of production were then much less. Machine cleaned bricks from the ruins in the burned district are now selling at $9 to $10 and are in great demand. Sand-lime brick are quoted about the same as common, and there is a fair demand.

A representative of Gladding, McBean & Co. recently said to the correspondent for Clay Worker: "The present shortage is largely due to the fact that we had to shut down last month. We are getting oil now, however, and have just finished two new kilns that will supply 80,000 brick per month each. We hope to get our heads above the flood of orders before long. The demand is tremendous and shows how much is being done to rebuild the city."

W. E. Dennison, manager of the Steiger Terra Cotta and Pottery Company, said recently: "We have orders on hand to run us six months, and cannot agree to deliver brick to new customers in ninety days. The present shortage in pressed brick is due to the overwhelming demand now existing in San Francisco, and to the fact that during January we could get no oil, had to shut down and ran behind."

Grove Street School, Oakland
F. D. Voorhees, Architect

Convention of the Architectural League

A CONVENTION of the Architectural League of America was held in Washington, D. C., April 22d, 23d and 24th, under the auspices of the Washington Architectural Club. The clubs participating were: The T-Square Club of Philadelphia, Cleveland Architectural Club, Toronto Architectural Club, Pittsburg Architectural Club, Twin City Architectural Club, Chicago Architectural Club, Detroit Architectural Club, St. Louis Architectural Club, Washington Architectural Club, Architects' Club of Urbana, Ill., National Society of Mural Painters, Natural Sculpture Society, San Francisco Architectural Club and the George Washington Architectural Club of Washington, D. C.

The Boston Architectural Club, Memphis Architectural Club and the Portland (Oregon) Architectural Club were also represented at the meeting.

Among the more important matters taken up at the meeting were the question of individual membership in the League; the transfer of members from one club to another; the establishment of the office of permanent secretary; traveling scholarships; fellowships in the Architectural Schools; and the question of fuller preparation on general educational lines for entrance to professional schools, and less general and more special work in the professional schools.

A number of papers of special interest were presented by eminent architects.

Tallest Brick Chimney in the World

THE Alphons Custodis Chimney Construction Co. of New York has just received a contract to build the tallest chimney in the world—in fact, the tallest structure of any sort save the Eiffel Tower and the Washington Monument—from the Boston and Montana Consolidated Copper and Silver Mining Co. at Great Falls, Mont. The chimney will rise 506 feet above the top of the foundation, and will have an internal diameter at the top of 50 feet. The size of the chimney has been proportioned for leading off 4,000,000 cubic feet of gases a minute, with a maximum temperature of 600 degrees F. The gases consist mainly of SO_2 from the smelter furnaces, and will travel 2000 feet through flue ducts before reaching the chimney. The chimney is designed so that an additional sixty feet may be put on at any time in case additional draft is desired. The point where the chimney is to be built is 3,535 feet above the sea level, and on account of the exposed location and the strong gales in Montana the chimney has been designed to withstand a gale of 125 miles an hour.

Assuming a unit weight of 116 tons per cubic foot of brickwork, the maximum pressure at the foot of the chimney, due to the dead weight and the wind pressure, is computed at twenty-one tons per square foot. There will be four flue openings in the bottom of the chimney, each flue having 528 square feet of area. The entire chimney is to be lined with Custodis sectional lining, laid in acid-proof mortar. The present common brick chimney at the smelter, which is 186 feet high by twenty feet in diameter, has cracked badly, on account of the influence of the SO_2 gases on the cement mortar. In designing the new chimney, special care has been taken to have it resist the influence of the sulfuric acid gases. The sectional lining will consist of a 4-inch acid-proof brick laid in acid-proof mortar and separated from the main wall by an air-space of two feet.

To prevent the flue dust from settling behind the lining, special form bricks will be employed and all spaces at the top of each section of lining, through which the dust might find its way, will be closed with mineral wool. The top of the chimney will be protected with a terra cotta cap with overlapping edges laid in acid-proof mortar. As the heavy gases will fall in rainy weather alongside of the chimney, the upper part of the outside brickwork will be pointed up with acid-proof mortar; also the outside ladder and lightning rod will be protected against the influence of the acids.

The total dead weight of the chimney is estimated at 17,000 tons, and if common brick was employed, it would require about 6,000,000 bricks to build the chimney. To scaffold this chimney from the inside will be quite a feature, and four elevators run by electrical power will be employed to carry up men and material. The foundation will rest on rock and consist of circular concrete walls thirty feet in height with an outside diameter at the bottom of ninety feet. The pressure produced on the rock due to the dead weight and wind pressure is computed at 7 tons per square foot.

A new brick yard will be built especially for the purpose of manufacturing the required perforated radial brick, and the plant will be so constructed as to obtain an output of 100 tons a day. The entire brick plant will be run by electrical power derived from the waterfalls of the Missouri River. An aerial tramway will be constructed to transport the material from the brickyard to the chimney, as the brickyard will be at a much lower elevation than the chimney. The Custodis Co. expects to finish the chimney in about one year's time. The contract price without foundation is in the neighborhood of $200,000. The tallest chimney in the world at present is the 460-foot chimney at Freiburg, Germany, so that this new chimney will beat the record by just 10 per cent.—The Engineer.

Cement and Concrete

The Roadbed of the Future

Durability and Rigidity of Concrete Promises Practical Solution of Difficulties now Encountered---Will Make for Economy and Comfort of Traveling Public

By J. W. SCHAUB, M. Am. Soc. C. E. in Cement Age

AS civilization advances we learn by experience that permanency in the construction of our works proves the best safeguard against waste. This applies to our pavements for streets, our buildings, our bridges for highways and railways, and in fact everything constructed for the benefit of mankind. But more particularly does this apply to the roadbed and track for railways, which must continually be adjusted and repaired to counteract the destructive agencies of nature, and the constant action of the passing loads.

Upon looking over the reports of several western railways we find the cost of maintenance of track and renewing ties and rails to be about $600 per mile. On some of the Eastern roads we find the cost to run as high as $2000 per mile. To put the case in another way, almost one-sixth of the entire cost of operating the railways in the United States is expended in the mere care and renewal of the track. For the year 1905, this amounted in round numbers to about $150,000,000. This does not include, be it noted, other expenditures in the maintenance of way, such as fences, bridges and culverts and repairs for other purposes.

As railways are constructed today, we find the rails laid on wooden ties, and held in line by spikes which are driven into the ties by the aid of the eye and main brute strength. If the spike is not in line it is knocked into line, or, it is drawn out, the hole in the tie is plugged up and then the spike is redriven. At best it is a crude process, but what happens after the spike is in its proper place? First, we see that the yielding action or wave motion of the roadbed loosens the spike and then the first lateral pressure on the rail throws it out of line. The spike is then ready to go through the same operation as when it was first driven.

The first departure from the present practice, which should be adopted, should be the elimination of the spike, and in its place a screw spike should be used, such as is now in common use in France and Germany. This spike preserves the timber against any unnecessary cutting, inasmuch as the hole for this spike must be previously prepared by an auger.

On most of our modern railways the ties are laid in rock ballast. Moreover, in some cases we find the tie plates inserted under the rails to pre-

serve the ties against indentation, and give the rails a stiff and unyielding bearing, and thereby preserve the alignment of the rails. This is approaching the idea of a permanent track and roadbed, but does it reach it? If the spikes are for the purpose of keeping the rails in line why use spikes? If the ties are designed to give an unyielding support to the rails why use wooden ties? If the roadbed is affected by the elements why leave it exposed to the weather?

The usual argument against an unyielding roadbed is offered by the railroad manager about as follows: He says the track must be elastic, otherwise the rails would be destroyed or broken and therefore the present form of track must be maintained. Yet this same manager will order the heaviest rails to be placed in the track, to be supported on the heaviest ties that he can procure, and laid on the deepest ballast to make an unyielding roadbed as near as can be by such devices. Now, if we would go a step farther, and with the ballast surrounding the ties make a concrete roadbed by filling the voids in the ballast by means of a Portland cement mortar, he will have obtained what he is striving to get and can never reach. To be sure it is not proposed to build a permanent roadway by such methods, but this is merely offered as an illustration to show the fallacy of the argument against the unyielding track. To be sure such a roadbed would be affected by the weather, but what argument could be offered against such a roadbed if it were absolutely drained from all moisture?

The greatest destructive element which our present form of track has to resist is the inertia of the moving load which passes over it. If it were possible to build a track to absorb this impact and vibration of the moving load, the destructive action would largely disappear. This is to some extent accomplished by the ballast in our present form of track, but only in a primitive way, when it is considered that the ballast is merely a mass of broken stone having no cohesion whatever except that which is obtained by the friction of its particles on each other. The writer begs to refer

ESTIMATED COST PER MILE OF FOUR TRACK CONCRETE ROADBED READY FOR TRACK RAILS

Concrete 2.8 cu. yds, @ $5.00	$14.00 per lin. ft.	
Timber, tie rod, etc @	4.00 per lin. ft.	
Drainage, @	2.00 per lin. ft.	
Gross cost per mile, 5,280'x	$20.00	$105,600.00
Deduct salvage on present tracks		10,000.00
Net cost per mile		$95,600.00
$95,600.00 @ 4 per cent interest, per annum		3,824.00
Assume maintenance of present tracks, per annum		$5,000.00
Assume renewals of present four tracks, per annum		2,000.00
Assume Total maintenance of present four tracks, per annum		$7,000.00
Assume maintenance of proposed four tracks	$400.00 per annum	
Assume renewals of proposed four tracks	600.00 per annum	
Assume Total maintenance of proposed four tracks, per annum		$1,000.00
Assume saving in maintenance per annum		$6,000.00
Assume interest on investment, per annum		3,824.00
Then net saving per annum per mile of four tracks		$2,176.00

here to a design for a permanent roadbed and track for railways which is now under consideration by the Rapid Transit Commission of the City of New York in connection with the proposed extension of the subway; and, also, by the commission appointed by the Pennsylvaina Railroad Company to build the tunnels in and around New York. This design contemplates a concrete roadbed, which is divided, for practical reasons, into two parts. A substructure is first prepared, upon which the final superstructure is to rest. This substructure will have to be designed to meet the conditions in each case; for instance, in a tunnel having a rock cut this substructure will, in many cases, be merely a thin layer of concrete to level off the bottom of the cut. On earth embankments, which are not settled, it may be necessary to build supporting walls in some cases, and in other cases it may be necessary to drive concrete piles. In any case it is contemplated to give the substructure an unyielding support.

After the substructure has been properly laid, the next step is to place the track in position. This consists of the rails and their supports, which are longitudinal timbers, creosoted, temporarily supported on wedges to give the proper surface to the track. The alignment of the rails is maintained by means of transverse rods, spaced 24 inches center to center, passed through the timbers. The rods pass through a gas pipe having a washer at each end to adjust the alignment of the track. Any superelevation of the rail is obtained by means of temporary wooden wedges placed under the longitudinal timbers. After the rails have been placed in position by means of instrumental work to a mathematical accuracy, the space between and under the longitudinal timbers is filled with concrete, forming a superstructure upon the previous superstructure. An open conduit may be formed in this superstructure to accommodate any wires for electrical purposes, and at the same time save some concrete.

The salient features of this design, are: First, the support of the track rails is not formed until after the track is in its final position, so that no accuracy in the surface of the substructure is required. Second, when it becomes necessary to renew the timber supports, the same can be removed without raising the rail. This is a serious problem which has yet to be solved in the present subway in New York. Third, no attempt is made to hold the track rail rigidly to the concrete, either vertically or horizontally. The timber serves merely as a support or cushion for the track rail, for any vertical or horizontal force applied to the head of the rail is immediately transformed to the timber below, which is made of such dimensions as to absorb any energy of this kind. This timber does not perform the duties which the cross tie is now called upon to perform inasmuch as no bending action takes place. This means that we can use timbers inferior in strength to the timbers now used in cross ties, therefore, this timber will not be so dense, and can be properly charged with oil in the process of creosoting. Any impairment in the strength of this timber, which all timber suffers by creosoting, will be of no consequence, inasmuch as the work that this timber is called upon to perform does not involve a question of strength.

The space outside of the timbers and between the tracks is to be filled preferably, with a rock ballast to give inertia to the roadbed. This space may also be filled with a paving of brick or stone or other suitable material laid on a bed of sand; or, in some cases, it would be preferable to omit all the ballast and hereby facilitate the drainage of the track. Especially is this true in the case of single track tunnels where the ballast outside of the rails will be an objection. Drainage is provided for under the roadbed at proper intervals.

The estimated cost of four tracks built on this form of construction, given on the plan herewith, shows in round figures a net cost per mile for four tracks of about $100,000. This may seem a very exorbitant figure, but when the saving maintenance is considered, to say nothing of the saving in repairs to motive power and rolling stock, this excessive course is converted into a saving. Moreover, the comfort in riding over such a track, which must necessarily be free from dust and noise, is apparent. With this form of roadbed, weighing practically as much per linear foot as the heaviest moving load passing over it, with steel cars provided with concrete floors to deaden the noise, there is no telling what comforts we may yet have offered to us on the concrete roadbed of the future.

* * *

A Whistler Anecdote

MR. FREDERICK KIPPEL tells this amusing story of the always eccentric artist:

"Yet I myself was eye-witness to a curious bit of insincerity or artistic satire on his part in his own studio. The first day I spent with him he received a visit from a foreign artist, an old acquaintance, with whom he had not as yet quarrelled. After a cordial reception, one that seemed genuinely cordial, the visitor, artist-like, went about the studio looking at everything. He seemed especially charmed with a small picture, and after standing before it for some time remarked, 'Now, that is one of your good ones.'

"'Don't look at it, dear boy,' said Whistler, airily. 'It's not finished.'

"'Finished!' exclaimed the visitor. 'Why, it is one of the most carefully finished pictures of yours I have ever seen.'

"'Don't look at it, dear boy,' persisted Whistler. 'You are doing injustice to yourself. You are doing injustice to my picture, and, what is more, you are doing injustice to me.'

"The visitor looked bewildered, but Whistler in a theatrical tone cried out, 'Stop, I will finish it now!'

"Whereupon he procured a very small camel's-hair brush, fixed it on a very long and slender handle, mixed the least little speck of paint on his palette, dipped the very tip of his brush into it, and then, standing off from his picture with the action of a fencer with his rapier, he made a forward thrust and touched the picture in an almost infinitesimal spot with his pigment.

"'Now it is finished,' he exclaimed, 'and you may look at it.'

"All this was highly dramatic and capitally acted, for, after all, it was acted, as what happened afterward shows. For, some time later, I met the foreign artist again, and he told me that he had left his umbrella behind him, and, calling for it the folloiwng morning, was told by the servant, who recognized him, that Mr. Whistler had gone out, but that he might go up to the studio and look for it. He found it, and also found out something else. For, stopping once more to look at the picture which had been 'finished' for his especial benefit the day before, he saw that the little dab of wet paint which Whistler had put on so dramatically had been scrupulously wiped off again."

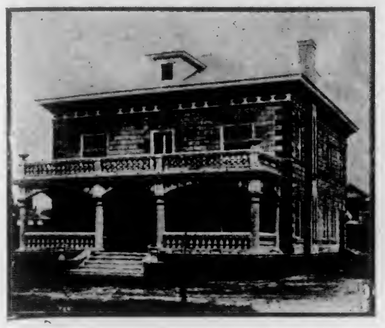
* * *

TODAY

Lives of some great men remind us
That we will, if we are wise,
Leave our modesty behind us
And get out and advertise.—Judge.

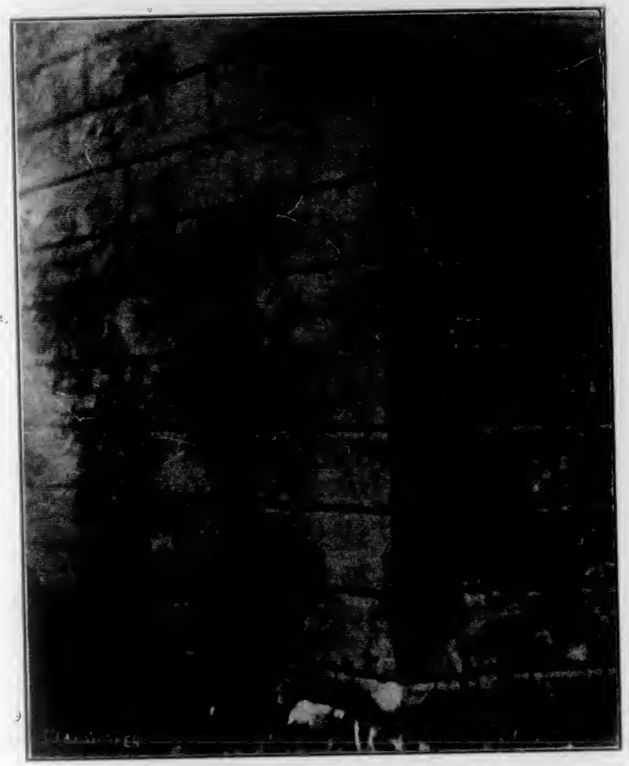
Cement Blocks

Reasons Why They Will Never Come into General Use



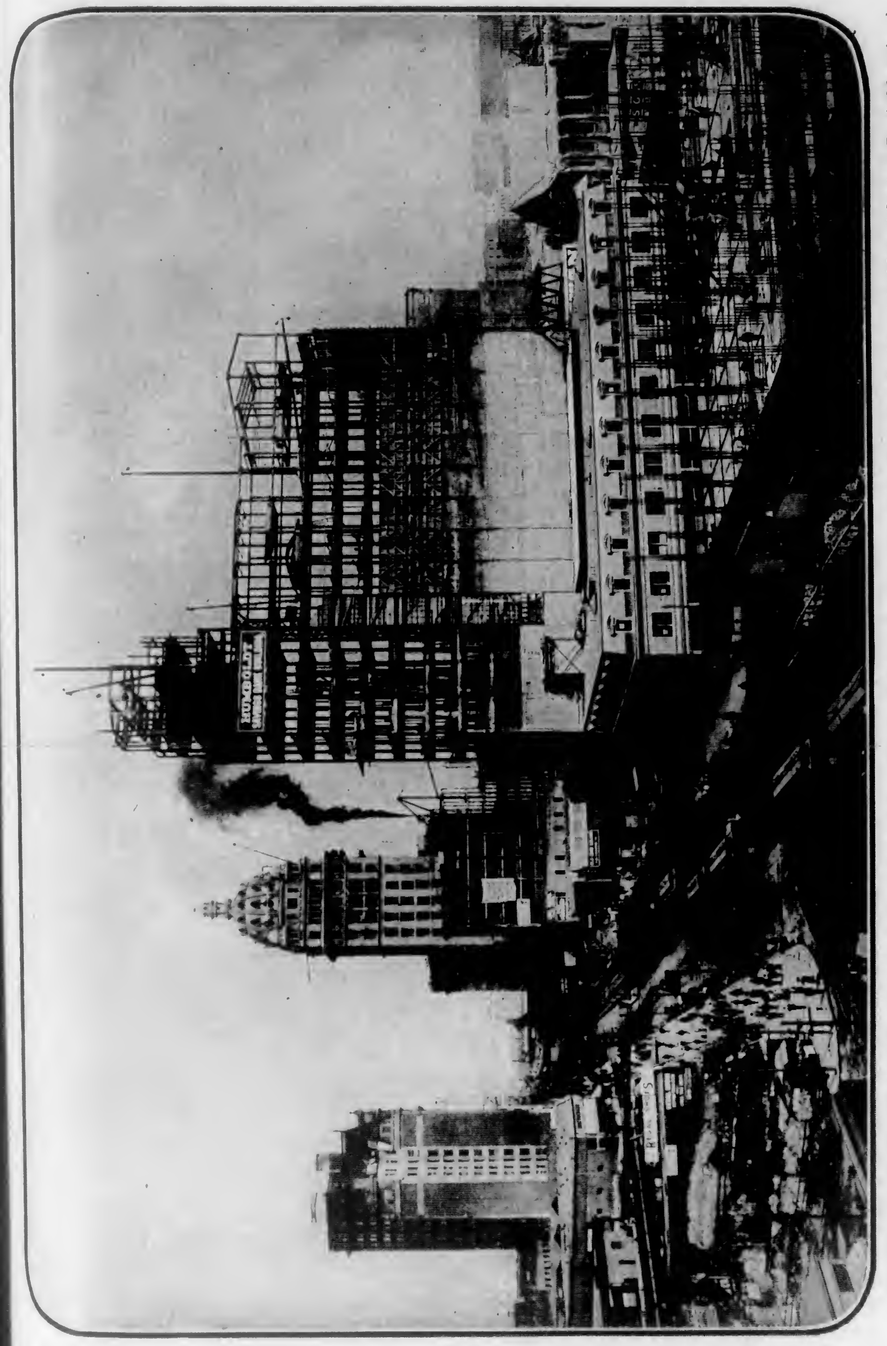
THE more the question is investigated the less the clayworkers have to fear the inroads of concrete construction. Any new thing causes some of us a certain amount of anxiety. To be sure, the use of concrete in building construction is by no means new, though relatively new uses have been made of it. The cement blocks, which it is affirmed that any one can make in the back yard or under a shed, or any place where sand and gravel are accessible, threatened at one time to have some influence on the brickmaker, but the more the cement block is understood, the more generally it is used, the fewer friends it has. A few years ago, there was a cement-workers' convention in Indianapolis and it was very thoroughly given up to the makers of cement block machinery. Much was claimed for it and, in truth, the idea was well promoted from the promoters' standpoint. The year following, the cement users had their convention in Milwaukee and the proceedings were made up very largely of discussion as to cement block problems. The character of the block, from the structural standpoint, has never been satisfactory and, while the proceedings of the first convention were largely made up of prophecies and expressions of hope and encouragement, the second convention at Milwaukee, was based on the troubles of the previous year. The proceedings of that convention would indicate, as they did, that these blocks are a very poor building material. Structurally, they are deficient, and the difficulties in the way of laying them properly were shown to be very great, if not insurmountable. When they were made for the purpose of carrying out a good design, their cost was so great as to place this material outside the market. But the greatest of their troubles was that which relates to the absorbing qualities of the block. Almost literally, the rain beat through the walls. The cement block building was damp on the inside. This difficulty was not made very conspicuous at the first convention, though it was discussed to some slight extent. It was more conspicuous in the Milwaukee convention and various dopes and preparations were suggested for rendering the block impervious. At the last convention, just held at Chicago, this feature was decidedly conspicuous and there were many concerns represented in that meeting who were offering solutions to the "humidity" problem, this feature, in itself, indicating the serious character of the problem. A number of the builders and engineers took up the cement block idea with some enthusiasm and considerable interest, but so far as the writer knows, among the architects, the cement block has not, at this time, one capable friend. Many who were desirous of specializing in the use of the cement blocks have been compelled, because of the character of the material furnished, to entirely abandon their use.

The artistic value of the cement block now is, and always has been nil. It was argued in the beginning of the recent history of these blocks that an artistic reproduction of various forms could be cheaply made and that a building having all of the beauty of form and color of stone could be readily secured through the use of this material; that any place where there was sand and



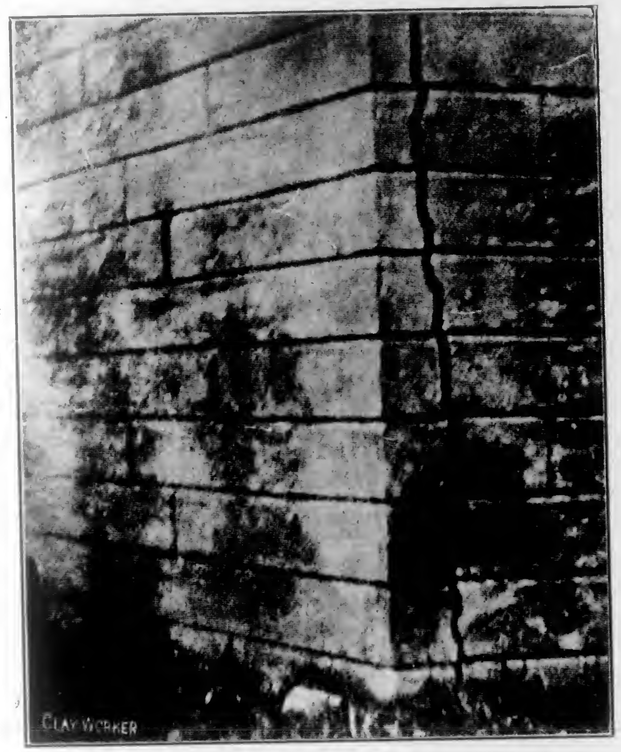
Section of a Badly Cracked Cement Block Building in Louisville, Ky.

gravel one could build a highly decorative and substantial structure which would have all of the interest of the cut-stone building. Some very good work has been done by one or two concerns, not with the hollow cement block, but with a cement stone composition which was cast in sand molds, but this was not the cement block ordinarily known in the building trades, but was a material requiring great skill and special preparation in its manufacture. The cement block which we now know is always associated with the idea of ugliness. The writer never saw a cement block building that was not ugly, and he never saw a cement block which a self-respecting architect or an ambitious builder would use in any building where there was any consideration whatever for appearances. The makers of cement block, as ordinarily understood, can not point to any building of decided artistic merit. This leaves out of the question altogether the matter of structural excellence. One great difficulty which users of this material have to contend with has been the difficulty of carrying out good designs. It is very expensive to make blocks of great varying size, either in height or in length, and no one wishes to conform the size and spacing of frames to suit a particular machine. There are relatively few plants in existence which can make the plan of the ordinary stone or brick building and carry out the design in cement blocks. This feature, alone, has been very largely instrumental in condemning the cement block idea. No architect cares to make his plans to fit a material. He prefers that the material should be made so that it will fit his plans. The condition, as it now stands, places the cement block out-



Market Street, San Francisco, April 1, 1907, looking East from the Junction of Ellis and Stockton Streets—Left to Right are the Chronicle, Mutual Savings Bank, Monadnock, Call, Examiner, and Humboldt Savings Bank Buildings—On the Extreme Right Foreground is Being Erected a Nine-story Reinforced Concrete Building, the Largest of that Class in the World.

Courtesy of Sunset Magazine



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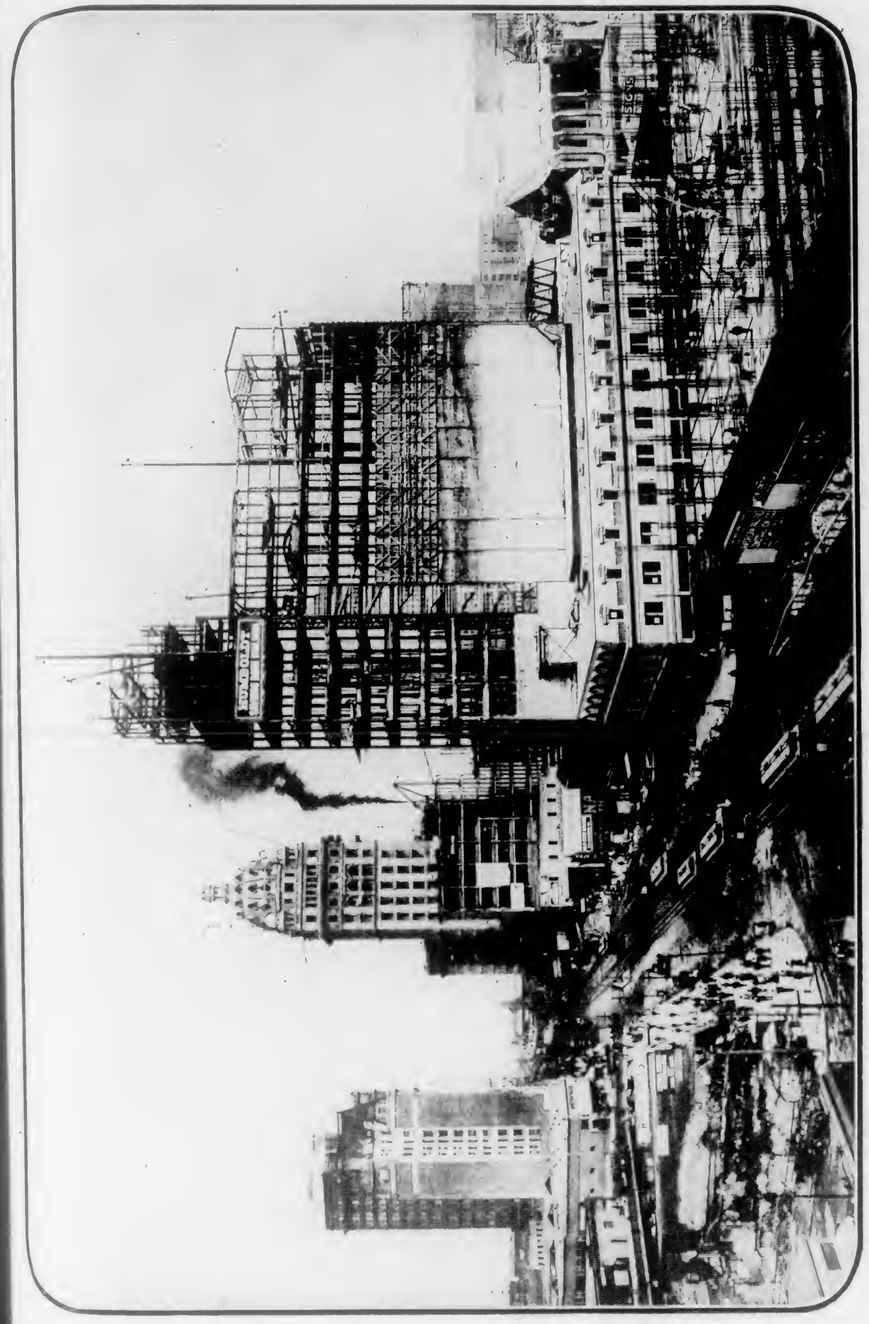

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Courtesy of Sunset Magazine

side of the range of possibility as a material which will compete with brick and stone. Saying nothing about this feature of the cement block idea, leaving out the question of the absorbent qualities, also that of form, who is it that ever saw a cement block that was not dull and dead and leaden in color? The cement block idea was received with a certain amount of interest because of its alleged cheapness and the promise of its excellence. The latter promise has not been fulfilled and it is neither as cheap nor as good as brick. The cement block will have a certain sort of pioneer existence for some time. It will continue to occupy new fields, but there is a limit even to this. The new fields having been exhausted, the market for the machines will have been exhausted. The cement block idea is passed.

At a recent meeting of the Engineering Societies of the State of Indiana, Professor Hatt, of Purdue University, remarked that the architects would have to reform their styles of architecture to accommodate the cement block. This was a remarkable acknowledgment coming from an eminent authority on the subject of concrete building materials. Of course, the architects will do nothing of the kind. To begin with, their spirit is unfriendly to this material because of its unsatisfactory history, and again, the architect is not fond of substitutions of this kind.

* * *

The above article is from Clay Worker, a well-known Eastern publication devoted to the clay industry. Naturally, our esteemed contemporary is inclined to be prejudiced against any and all forms of building material that threaten to supplant brick or terra cotta. The Architect and Engineer is just as strong an advocate of brick as it is of concrete, but it thinks there are times when concrete is preferable to brick or terra cotta, and vice versa. There have been just as many brick failures as concrete, but not so much attention has been given them. The position of this magazine relative to reinforced concrete is too well known to call for an expression here. The purpose of reprinting the article from Clay Worker is to emphasize a point which the Architect and Engineer has endeavored to impress upon its readers for two years—that poorly mixed concrete, whether it is to be in the shape of building blocks, or straight construction, is to be shunned. There have been some deplorable examples of concrete failures because of poor workmanship, incompetent supervision and consequent bad construction. There have been some fearfully ugly attempts at cement block building for the same reason. Artistic cement blocks are as scarce in California as flies on a frosty morning. Tho Osborn residence in Fresno, built by the Worswick Street Paving Company, comes nearer to the artistic than anything thus far called to our attention. Some of the things which the writer in Clay Worker says are unfortunately only too true. There are some other things said to which exception is taken. If the concrete block industry is on the wane, the promoters themselves are in a large measure to blame. Architect and Engineer readers who have had experience with cement blocks are invited to write something for publication, and if they have photographs of their work, send them along.

The illustration in connection with this article shows a crack in a cement block building near Louisville, Ky. A poor mixture of cement and sand is given as the primary cause of the failure.

* * *

"Of course," said the architect, "you will want a porte-cochere." "Sure," replied Mrs. Nuritch, "we'll want a big one with glass dingle-dangles on it hangin' from the parlor ceilin'."—Philadelphia Press.

Paint Legislation in California

By H. T. JAMES

AN act was passed at the last session of the California Legislature governing the adulteration of paints, oils, etc. Legislation in connection with the paint question has been agitated in fourteen other states, and the ultimate result will, unquestionably, be a national paint law, and we trust the final result will be a comprehensive, intelligent law, covering the entire ground; one fair for the manufacturer, dealer and consumer, and for the mutual benefit of all.

The Paint Grinder's Association of the United States, or the Paint Manufacturers' Association have taken this matter up with the International Association of Master House Painters and Decorators of the United States and Canada, and they have appointed a committee to confer with the manufacturer's committee in an endeavor to obtain the passage of a national pure paint law, rather than have a variety of state laws.

All reputable manufacturers appreciate the necessity and the benefits to be derived from the passage of a national pure paint law, provided it is properly and intelligently drawn.

The questions to be considered, however, are complicated and varied: the intention of the California paint law was good but it is not practical, as it is fashioned upon the model of the national pure food law, the same as the North Dakota paint law, and the principles are entirely inapplicable to composite mixtures such as paint.

It is decidedly vague, and it will be difficult to predict the construction the Court will give it, due to the fact that this law undertakes to apply a definition of adulteration to artificially made compounds such as paint and varnish. Such a definition, while perfectly sensible when applied to articles consisting of a single element such as linseed oil, or articles that have an accepted standard, such as milk, butter, etc., becomes meaningless when applied to a compound or mixture which can be made from a variety of different ingredients in different proportions and in various ways, and to which there is no accepted or recognized standard.

Several States have seen of their own accord the absurdity of the North Dakota law, and bills introduced in these states have been labeling bills generally, and not bills undertaking to sanctify certain ingredients and exempting them from labeling as covered by the North Dakota law.

A national law should be passed that would secure full protection against that class of cheap, unreliable and dangerous paints which are widely advertised by mail order concerns, and which generally bear the name of some fake manufacturer, and at the same time will not compel the reputable paint grinder or manufacturer to disclose formulas which are valuable assets in their business.

A law which would require a label to only show the total percentage of inert extenders, or of thinners, other than Linseed Oil, Turpentine or Japan Dryer, and would not necessarily require the Grinder to disclose his formula; yet that would afford a reasonable degree of protection against fraud.

Every manufacturer knows it is an easy matter to cheapen paint almost indefinitely by overloading it with inert extenders, benzine, water or linseed oil substitutes instead of using pigments and vehicles of recognized paint value, as practically demonstrated by the manufacturers, and by most eminent paint chemists in the country.

The Union Ferry Depot, showing the Reconstructed Tower of Reinforced Concrete. Pacific Construction Company, Contractors

Heating, Lighting and Electrical Work

The Heating Equipment of the Modern Office Building

By GEO. W. NISTLE, in Building Management.

THE heating equipment of the office building is something which nature compels us to consider, and may assume such magnitude as to become the deciding factor in the general design of the mechanical equipment of which it forms a part.

To the uninitiated it seems to be simply, very simply, a matter of pipes and radiators. But even at this point we find some things to mar the great simplicity of the problem. Pipes or radiators, which shall it be?

The early days of steam heating knew in the equipment nothing of anything but pipes, the pipes which conveyed the steam through the rooms to be heated; and sometimes the outfit consisted of a single pipe run through the center of the room near the ceiling, which was nicely warmed, while on the floor and particularly near the windows everything was cold.

This one pipe system early proved to be inadequate and had to be divided and sub-divided to get the pipes where they would do more good. The one pipe idea dominated every subdivision and in order to get a sufficient pipe into the room to do the heating the pipe had to be zigzagged back and forth several times, compelling the steam to travel the greatest possible distance against the greatest possible resistance; naturally it sometimes got tired or used up before reaching the end. An improvement on this was to unite several pipes in one fitting at each end and thus shorten the distance and reduce the resistance. This scheme reached its climax in the box coil (a compact mass of pipes united at the ends and wandering back and forth between ends, placing an immense length of pipe in a few cubic feet). The interior pipes being surrounded on all sides by hot pipes had but little opportunity to warm the air of the room. Again the pipes were not beautiful and in offices had to be encased in ornamental screens which diminished their usefulness.

After a time some one developed the pipe radiator (a cast iron box base with short pipes screwed down into it in pairs, the top of each pair united by a return bend). Over the tops of all the return bends was placed a perforated cover with an ornamental cornice, making the radiator appear like a little pipe organ.

From this beginning the radiator has developed into the elaborately ornamented cast iron affairs of today with a continual drop in efficiency of such an extent that in blast heating (where the pipes are packed in a big sheet iron box and cold air forced between them where no one can see them) pipes are used almost entirely. In some of the most up-to-date office buildings in New York

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City the writer has recently seen pipe coils used in offices and must admit that in a place devoted to business the pipe coils are much more consistent than radiators.

Pipe coils and radiators are equally well adapted to operation on the various systems of piping in use.

Assuming that we are to use radiators and that the building has no power plant of its own, but must develop its own heat, we have on a larger scale the same problem that confronts the engineer in designing a heating system for a residence. We must have boilers. Generally in such a building these are best of the horizontal tubular pattern with plain settings, and each having on top a steam outlet to the heating supply main, and a return inlet below the water line. With a suitable system of distributing pipes (horizontal mains, branches and risers, vertical pipes), we have what is known among engineers as a plain gravity system, in which the steam rises by its own levity and the water of condensation falls by gravity, first to the bottoms of the radiators and then on down to the return inlet of the boiler. Very simple, but the water put in the boiler to make the steam is almost a universal solvent and carries with it about three per cent of its volume of air. The air is liberated by the evaporation of the water and goes with the steam through the pipes and into the radiators, collecting in the most generally unexpected places where its great non-conducting power makes it cut down the efficiency of the radiators to such an extent as to make them practically failures. A remedy for this was found in placing a small air vent operated by hand on each radiator. The occupants of the room were expected to open the vent and let the air out and then close the vent. It was frequently left open and when the air was all driven out it was followed by steam and sometimes water, which wet walls, floors and ceilings and was generally a nuisance.

All this trouble was supposed to be removed when an automatic air vent was developed. This was a little valve containing a thermostat which (by expanding when the steam got to it and heated it) closed the vent when most of the air was driven out. It opened again when cooled off, whether by the accumulation of more air or by the shutting off of the steam supply, and in the latter case the condensing of the steam enclosed in the radiators and piping at the time of shutting off made a partial vacuum in the system into which air rushed through all the open vents. Then the whole process had to be repeated, and as temperature changes were all that the valve recognized, it frequently allowed water as well as air to be expelled, thus making trouble. There are on the market at the present time automatic air vents intended to be free from all these defects, and they are when new. They let out the air when cold under pressure, close the vent by a float when water comes, and have a little check valve to prevent the entrance of air when cold under vacuum.

With a well designed and well cared for system of the foregoing type and having the latest improvements in valves and other fittings, very good results may be obtained in the building having no power developing plant of its own. In the building having its own power plant we have a different set of conditions.

Boilers in such plants seldom deliver steam directly to the heating plant and we may say ever receive condensation directly from it.

We generally have in such a plant engines for furnishing electric lights, pumps or engines for elevator service and pumps for house water supply. The exhaust steam from these sources of power is generally enough for heating the entire building in which thepower is used.

To force this exhaust steam through such systems of piping as we find in most buildings would require a pressure of from three to eight pounds per square inch. This as back pressure on the engines increases the cost of running

them from fifteen to twenty-five per cent, which generally means an equal increase in the fuel account of the building.

Systems of piping can be and have been designed so that steam can be circulated through them at a pressure of eight ounces to the square inch. But in reducing the pressure we reduce the energy for driving out air, so that such plants frequently become air bound and as a result water logged.

When properly equipped with devices for removing air, and properly designed and kept in good condition such systems serve very well.

The great majority of them have in each a horizontal supply main into which are connected the exhausts of the different engines after all engine exhausts are gathered in, an oil extractor and feed water heater are inserted and the main is led around the basement near the ceiling. A connection is made (through a reducing valve) with the live steam main so that when engines are all shut down the heating may still proceed. The end of the main delivers (through a steam trap, valve or other steam restraining device) into a receiving tank. From this tank the condensation is pumped into the boilers.

From the upper side of the main are taken the branches leading to the risers that supply the upper part of the building, also the branches that supply the radiators on the floor immediately over the main.

From the risers are taken (at each floor on which radiators are located) the branches for the supply of these radiators.

From the end of each radiator opposite that where the steam enters, a pipe with a valve in it leads to a return riser (so called). These return risers deliver in the basement into a main almost parallel with the supply main, but sometimes laid near the floor to bring it below the water level in the receiving tank into which the main delivers. This prevents the backing up of the steam from one riser into another.

A vent pipe from the top of tank to atmosphere is generally applied and if any air can find its way down through the riser and along through the main and then up through the water in the tank it may get through this vent. But we believe that the radiator vents get rid of most of the air, not all.

A system such as we have described can be so designed as to work one-half pound pressure and give good results. The currents of steam and condensation being in the same direction, nothing is wasted in conflict. The removal of the air being generally from the upper part of the radiator is more or less incomplete.

A modification of the system is to take all the steam through a large single riser to the top of the building where the mains and branches are located and the steam fed down instead of up. The only conflicting currents are in the main riser going up while a small part of the condensation is coming down. This is not a very large matter and probably of less importance than the pushing down of the steam against its natural levity. However, both of these disadvantages may be offset by the getting of steam to the farthest radiators first. Still another advantage that does not appear in a gravity system but does in a vacuum return system is that the vacuum return as usually applied operates with its maximum power on those radiators that are supplied with the weakest steam pressure.

Another form of gravity system continues the supply main around the basement and without any restriction terminates it at the receiving tank or boiler if a live steam job. From the main the branches and risers run as in our first mentioned plant, but there is only one opening into the radiator for the steam to use in entering and the condensation to use in leaving; thus the condensation has to fight its way against the incoming steam all the way down to the main in the basement where the two currents flow in the same direction.

This system, like the two pipe systems first described, can be modified by having all the steam carried up through a main riser and fed down to the radiators. As the steam goes down the water also goes down, and there are (after leaving the main riser) no conflicting currents except in the radiation. However, as the amount of condensation in the riser is continually increasing there is a possibility of the radiators at the bottom getting more hot water than steam if the pipe sizes be reduced.

To make any of the systems we have described operate at a pressure under one pound requires that the pipes (both supply and return) be very large, consequently expensive.

In attempting to save parts of this expense pipe, sizes in most plants have been made so small that an average pressure of five pounds is needed to circulate, and generally as back pressure. An effort to remove this back pressure was made some twenty years or more ago by an inventor who attached a vacuum pump to the end of the return pipe, and by almost closing the return valves on the radiators, sought to permit enough vacuum effect to be produced on each radiator to remove all the water of condensation and air. Theoretically this was all right, and if all return valves were properly adjusted and none of them got clogged with dirt it worked well; circulation was good and back pressure was removed. However, in a large plant the return valves could not very well be all adjusted correctly, some being open too much and allowing steam to blow through and spoil the vacuum in the neighborhood of the lame valve and possibly all the way down to the pump, where an effort was made to preserve the vacuum by injecting large volumes of cold water. This in addition to the condensation was more than the boilers could take and much of it had to go to the sewer after being heated by the steam and the rest of the water. This made the system expensive to run in some cases, even if it did remove the back pressure.

Another inventor brought forward a system of air removal by vacuum, and by this time automatic (thermostatic) air vents had come into use and he put one on the air outlet of each radiator and connected all the discharges to the vacuum and let the condensation get away by gravity as before. If the return system was good the plant worked well; if not it did not. But back pressure was removed and the system was (so far as vacuum valves were concerned), automatic. It did not take much dirt to stop the action of some of the valves and put their radiators out of business. And if return piping was pitched in the wrong direction, or (in a one pipe job) the supply and return piping was too small, the trouble from these sources was aggravated. The owners of the vacuum return system soon made an arrangement whereby they could get thermostatic valves large enough to care for both air and return, and with one of these on each radiator their system became automatic (when properly cared for). Their thermostatic valves consisted of a rubber plug about four inches long, set in a screw by which it could be brought down on the valve seat or moved from it; when hot it was expected to expand toward the seat and close or nearly close the outlet. The expansion and contraction of the plug was so very slight in the range of temperatures to which it was exposed that if it ever got near the seat it never got very far from it, so it was very easily put out of business by dirt or poor adjustment. It is practically abandoned now.

Another inventor brought out a valve having a sealed cylindrical float with hemispherical ends, and having a valve at the bottom which was supposed to open when the water of condensation got deep enough to raise the float. He also had a separate air opening above the float and controlled by a thermostat.

This was claimed by the older concerns to be an infringement, and as the

valves have been marked "Pat. applied for," the patent office apparently thought so too.

The sealed floats sometimes collapsed and the air openings got choked and the valves went out of business too frequently to be profitable, but they stirred up the older concerns who bought a patent on a so-called motor valve having a diaphragm operated by the vacuum and assisted by a float. The diaphragm was soon abandoned and a piston put in its place. The air was removed through a small opening closed by the rising of the float. These air holes would get stopped by dirt and the pistons got stuck and put the valves out of order. They are not now on the market, having been replaced by an open float which serves both as float and piston. The air is removed by a constant invariable opening, and the whole combination works well until the air opening gets closed or the piston-float gets bound by dirt.

Long before the above float system appeared, another float valve came on the market containing no thermostat or separate air opening; the float was open at the bottom and so did not collapse. The air was removed (after the water had been drawn off) through the same opening by which the water escaped, this opening being reduced to the proper size by the falling of the float. The continual changing of size kept the opening well washed and clear and the float being non-collapsible and not confined closely kept at work all the time, and as the air opening was very small when the float was down it did not blow through steam; and in some cases plants actually ran through the entire day without the use of any cold water at the pumps.

Other improvements will no doubt appear from time to time, but those we have mentioned are the principal ones just now.

In closing we may properly add a statement of the essential features of a perfect heating system; these are in the order of their importance:

First—The complete and positive removal of all water of condensation as fast as it is formed in piping or in radiators.

Second—The complete removal of all air or other gas mixed with the steam, as fast as it enters the radiators, and without impeding the removal of water or being impeded thereby.

Third—Absence of back pressure on the engines furnishing the exhaust. This feature becomes more important as the grade of engine becomes better.

Fourth—Absence of water and air and presence of a partial vacuum in radiators before turning on steam so that when steam is turned on it will quickly fill the whole radiator.

Fifth—Automatic action throughout with no adjustments to be remade every time a valve is opened.

To these might be added adaptability to systems of automatic temperature regulation.

* * *

On Shipboard

Little Boy—Wanna hear my doggie talk?

Little Girl—Dogs can't talk.

"Mine can. Now, listen. Rover, which part of this steamer do you like best?"

The Doggie—Bow!—Philadelphia Press.

* * *

A cold hand-out appeals to the hungry man more than a warm hand-shake.

* * *

About the first step toward reforming a man is to catch him in the act.

Ways of Food Crooks

Scarcely a day passed, a baker told me, that he was not approached by a food crook offering an undetectable substitute that would make his fortune. One Chicago firm besieged him with catalogues of their marvelous food preservatives for milk, butter, eggs, cheese and fruits. They declared that if used according to directions these discoveries would not violate any pure food law. The milk and butter preservative they stated had the same effect as ice, and only differed in the temperature it produced.

The meat preservative was a superior antiseptic discovered by an eminent German chemist and used throughout Germany not only by the first-class dealers but in the army and navy as well. This last was one too many, and he sent post haste for samples of these marvelous elixirs and turned them over to a municipal chemist. There followed illuminating discoveries. The milk medicine at one dollar a quart turned out to be 95 per cent water and 5 per cent formaldehyde gas, costing the producer about four cents. A pound of the German chemist's discovery which sold "at the cut-rate price of fifty cents" consisted of less than ten cents' worth of boric acid and salt. The Chicago firm received a letter which had the desired effect of striking his bakery from their mailing list.—Elizabeth Westwood in Good Housekeeping.

* * *

Value of San Francisco Junk

Southern Pacific and Santa Fe Railway freight officials state that between April 30, 1906, and January 15, 1907, junk, to the value of almost $3,000,000 was shipped from the burnt districts of San Francisco to various Eastern points. Most of the junk sent East consisted of steel, copper, brass, and lead. The railway people have particularly collected figures showing that over $5,000,000 worth of junk, in the way of copper, brass and lead have been already recovered from the ruins.

In the opinion of a great many engineers, the ruins will yield eventually molten metal of all kinds in excess of $26,000,000. They estimate the recovered and recoverable scrap steel and iron as being worth over $7,000,000, while steam, electric and other machinery taken from the ruins represent a high valuation.

The value of the millions of brick they estimate will be between $8,000,000 and $10,000,000. The engineers also figure that there were about two billion brick in the ruins, and that 25 per cent of them will be used again, and are worth from $3 to $4 a thousand.

* * *

Architect Must Be Cultured.

In addressing the architectural students at the Massachusetts Institute of Technology, when he visited Boston, Sir Aston Webb touched upon a point that is too often ignored, a matter that seems likely to be more than ever lost sight of by those guided by the Society of Beaux-Arts Architects into the belief that what is taught over the drawing-board is the all-important thing. Sir Aston said: "You will be very apt to think of nothing but architecture. An architect ought to be a cultured man. He has to move among cultured people, and if he is not as cultured as they are, he is put to a very serious disadvantage. He is not well provided unless he has read a great deal and has some other accomplishment.

Changes That Have Come to Plaster

THERE is hardly any part of house construction that has undergone more radical changes in the past few years than that of plaster. Just when it began, and how, is not so important, here as the fact that what is known as hard wall plaster has been steadily crowding the old-fashioned lime mortar into the background the past few years, and it promises to crowd it still further in the next few years. This hard wall plaster is calcined gypsum, the material that we used to call Plaster of Paris. It got its name in the early days from the fact that gypsum was first calcined and marketed in Paris. Among the initiated, however, this name is lost, so to speak, for while there is still plaster of Paris, Kansas, Ohio, Oklahoma, Michigan and a few other points are producing and calcining gypsum for the general trade here at a very satisfactory rate, and this calcined gypsum is being made into hard wall plaster of various kinds and it is increasing in certain localities. In fact, practically every city of prominence has its hard wall plaster factory these days and some of them have a number of such factories which produce this plaster, or rather make it up by various formulas so that all that is required to make it ready for the wall is the addition of water. There is some that is called pulp plaster, others called fiber plaster and wood wall plaster. Practically all of them use wood fiber in some form or other, from coarse excelsior to a very fine pulpy mass of disintegrated wood. It is not possible to give the exact formulas, for these are trade secrets, and any way, they are not essential to the retail dealer in this material. What he wants to know about it is, does it offer any advantages to him as compared to lime mortar for this same work? Whether it does or not depends somewhat on local conditions. How near one may be to the factory making this material, and how convenient on the other hand the supply of lime and sand is. It may be that in many cases it will figure out that there is an advantage to the house builder and to the lumberman in the use of hard wall plaster from a first cost standpoint, but this is not likely to be common at the present time, in fact, it is much more likely to be the other way. It will probably cost the house owner a little more to put on hard wall plaster and it may be possible that the retail dealer will have to put up with a smaller percentage of profits for the value of the material handled, yet these are not the only factors to consider. If the house owner gets a better house by this method, he ought to be pleased, and generally will, for there is no question but that we have come to the day when people give more attention to the subject of building well than they do to that of building as cheaply as they can. With this fact established the fact that hard wall plaster is an advantage to the builder, is not so much a question of whether the lumberman will sell lime or hard wall plaster, but to be the one to first lay it before his patrons so that he will get the not furnish it the chances are some one else will and he will lose his lime trade and gain nothing. It is therefore not only advisable, but practically imperative for the progressive retail lumberman to not only study the subject of hard wall plaster, but to be the one to first lay t before his patrons so that he will get the benefit of the trade. It might be said, too, that this same idea applies in all lines of builders' supplies, that is, if the lumberman is counting on furnishing these things he should keep right up with the times and keep the new ideas and new offerings properly before his trade, or else some one else will get them before the trade in a different manner and he will find himself losing out. But that is getting off the subject a little, for plaster is what is under consideration now.

To be prepared to talk plaster intelligently, and especially hard wall plaster, calls for personal study and investigation on the part of the retailer, but prominent dealers in this class of material have paved the way for this with circulars

and literature explaining at some length what their product is, how it is used, and how it compares with lime plaster. Of course there is a chance now and then that the makers of the various kinds of hard wall plaster will paint the picture a little too rosy in their enthusiasm, but still they give one a very good insight into its possibilities, which can be followed up and toned down if necessary to fit the requirements of retailers' presentations to prospective builders. I have before me at this writing a sample of hard wall plaster literature which is put out by a Toledo company, that contains both information and suggestions. For example, after pointing out the disappointments that follow, when one builds a good house and after moving in finds the pleasure of occupancy spoiled by a poor job of plastering caused by the job being done by a cheap man they say:

"We make hard plaster, but don't you hire this 'cheap' man to put it on. We have made hard wall plaster for years and know that a cheap man can do poor work with our good material. He can't make 'pits' for that is impossible in hard mortar; he can't make 'map cracks,' for there is no shrinkage of material. He can 'skin the job' though, put on too thin a coat; he can neglect to provide a good clinch or key. He can retemper mortar after it has once set. All this will cause bad work. He can't make our mortar sift out. Our material requires water only."

In their specifications and instructions for use of hard wall plaster we are told that it is already mixed in the proper proportions and the only thing required is to add water.—St. Louis Lumberman.

* * *

Logic is Logic

The Irish intellect is more often associated with wit than with logic, but an Irish workman recently silenced for a moment the upbraiding tongue of his foreman by a display of something which bore just enough resemblance to logic to confuse his hearer.

The workman enjoyed leaning on his hod and making shrewd observations much more than he did stirring about, and the cry of "Mort! Mort!" fell on dull ears.

"Why don't you attend to your hod and keep that man going?" demanded the foreman severely when Patrick was enjoying one of his frequent periods of rest.

Patrick raised his hod with a leisurely movement and turned a pair of twinkling eyes on his accuser.

"Sure, now," he said, easily, "if I was to kape him goin' all the time sorra a thing he'd say at all, at all; an' if he didn't say anything I'd be thinking he wasn't there. An' if he wasn't there, sorr, what would he be wantin' of morthar anyway?"—Youth's Companion.

* * *

Bachelors

"Bachelors can be found roaming at large in all parts of the world. They inhabit apartments, clubs, open fields, bodies of water and music halls. They are also seen behind the scenes. They hover at times near front gates, and have been found in back parlors with the aid of a searchlight.

"Bachelors are nomadic by nature and variable in their tastes, never going with one girl long enough to be dangerous.

"Bachelors make love easily, but rarely keep it. Rich bachelors are hunted openly and shamelessly, and are always in great danger. Those who finally escape are, as a rule, useless ever afterwards."—Tom Masson.

Interior Decoration

Wall Paper and its Possibilities for Good Decoration

By C. WALTER TOZER

WITHIN the last several years wall paper has become a universal commodity and so inexpensive in the main that pretty nearly everybody can have walls papered with new and stylish paper, and nearly everybody does. Naturally, as a consequence, a great sameness in all work of this kind has resulted, and when, on the other hand, it is desired to have something different or out of the ordinary, it seems quite impossible to accomplish it by using wall paper in the ordinary way. The average dealer or decorator treats his papers purely from a merchandising point of view. His work is done without any special thought, with the result of sameness. It is very strange that they never think of suggesting something new in their treatment of their papers, and this all the more strange in view of the fact that many times the same pattern can be treated in a half dozen or more different ways. Because it is not done, is absolutely the fault of the decorator, as they have the very things right in their hands, with which they can make very unusual effects.

The crown border papers have a great decorative value, and they are not used as plentifully as they should be. By the use of these crown papers it is possible to paper a wall by first hanging the border, and then matching the wall paper up to it. In this way a completely finished design is produced at the top, which entirely eliminates the chopped off effect of the ordinary paper, when finished at the top by the picture moulding, or with the ordinary border. Then there are the papers with crown and base treatment. By means of the lower portion in conjunction with the crown border, the decorator is enabled to make a complete decoration without any unfinished look to it, top or bottom. The wall paper manufacturers are going to greater lengths each year to provide paper

A Floral Cut Out Effect

Tapestry Pattern Cut Out. Fine Effect Above Wainscoting

decorations which not only rival a lot of hand-work, or so-called fresco work, but in very many cases surpass it. Better it is, by far, to have a perfect design properly colored and printed than a bungling interpretation of a good style of ornament by an incompetent workman. Many of the self-styled fresco painters of today are absolutely unable to draw well, and their ability in color mixing is limited, indeed. A design which has been carefully planned and colored by an artist of ability, and reproduced by machinery is far better than most of the clumsy work which we see done.

There has recently been put upon the market another novelty which is easily traceable as an outgrowth of the crown idea. The new style of paper contains two or more lengths or patterns to a roll; in other words, there are two pieces of printed paper ten or twelve feet long to each piece. The top of each piece carries a completed design, while the bottom also has a perfect design or else has a plainer effect which dies off naturally into the base board. When these papers are hung, they have the effect of a beautiful hand-decorated wall.

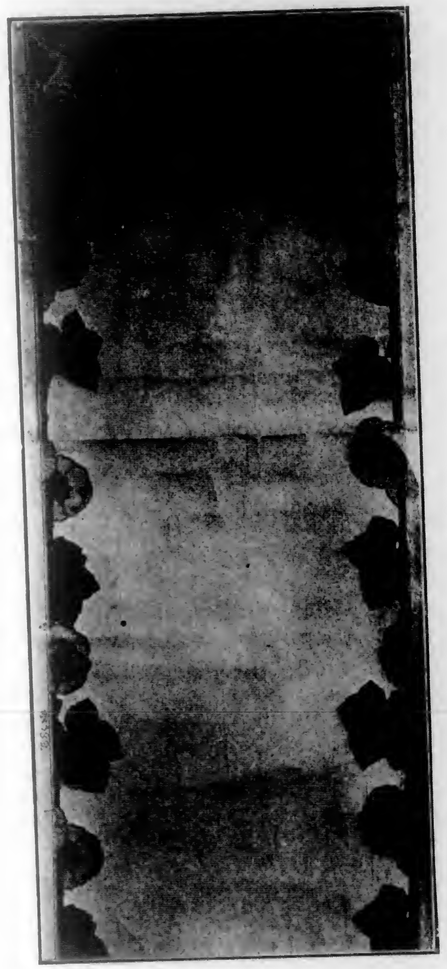
Another very attractive style of paper is found in the imported lines. The papers are termed scenic panels. The patterns are so large in length and breadth that it takes several rolls of paper matched up to make the complete pattern. Large wall spaces can thus be treated and show no repetition of the pattern in any way. The effect here is also that of a beautiful frescoed wall.

One American factory is now producing a paper which has wonderful possibilities. The goods are put up in double rolls, and each double roll contains two lengths of a completed pattern. They are printed on the same piece by a new patent process, and each length gives dado, side wall and frieze. The strips run twelve feet long and the pattern is so arranged that it can be made to fit a room of any height, without destroying the effect of the pattern. By their use the decorator can get a twelve-foot pattern without any repeat. A line of independent friezes is also made by this factory. One a fourteen-inch border containing over thirty colors and having a repeat every twenty feet. Another is thirty inches wide with over forty colors, repeating every eleven feet. One especially good frieze or border is thirty-eight inches wide and is made in burlap effects. It is a splendid frieze for halls, libraries and all sorts of Mission rooms.

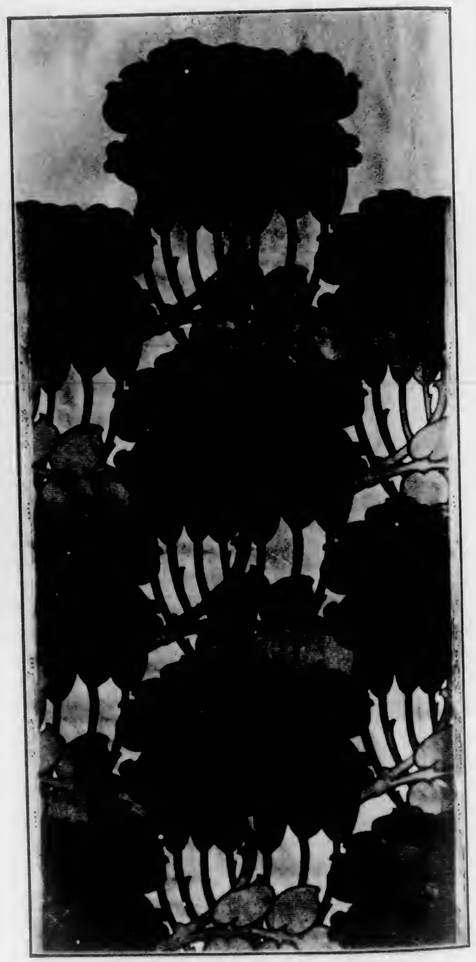
In looking over the French lines we also find a wall paper novelty, which is thoroughly pleasing and highly decorative. These have been offered only during the last season. Can one imagine a more charming chamber effect than having a very simple pattern in the wall paper, a floral crown border in naturalistic colorings, and then a fabric for the draperies exactly matching the pattern and coloring of the border? We think not, as a room so treated is certainly about as charming as it can be made. The papers are not necessarily expensive and have the cretonnes, chintzes, and printed linens matching. Another splendid feature is that the fabrics are also run in borders for use as valances. Hence it will be seen that the possibilities of wall paper decoration are being carried very far.

Without the use of such treatments as we have just described, the decorator has possibilities of manipulating the ordinary paper to produce some very clever effects.

For instance, instead of using a crown border, a pattern may be cut out producing an effect equally as pleasing and very unusual. A plain color or striped paper can be used as the lower part of the wall and as a frieze some floral or conventional pattern can be so cut out as to produce a finished and artistic treatment. The cutting out of these patterns requires some time, naturally, but not as much as one would think, and surely the effect is worth the extra time thus spent.



A Fine Crown Border Effect



A Wall Pattern Cut Out to Form Frieze Effect

Then, again, unusually effective decorations can be obtained from the scenic patterns. Many of these run in beautiful tapestry colorings, having perhaps a roadway or stream of water depicted in the design, with trees surrounding. Such papers can be used so effectively above a wainscot of wood or burlap. In using this class of paper it should be planned to use only one or two repeats of the pattern, cutting out around the tops of the trees and then either blending or plainly tinting the space above to the ceiling line or moulding, as the case may be. The effect is splendid and very successful, doing away with the monotony of the constant repeat. Large, bold Morris designs or conventional patterns can be used just as effectively and may be used as solid wall and frieze, without wainscoting of any kind.

The pictorial friezes also afford unlimited opportunities for the wide-awake decorator to produce novel effects. He is not compelled to put a certain paper of a prescribed width in a certain place just because the manufacturer or designer says that that is the only place for it. They nearly all can be decreased or increased in width as well as in length. For decreasing their width we can again resort to the cut-out method, and for increasing their width we can carry up the sky line, or tops of trees by the use of fresco work. To decrease a pattern in length a very effective manner is to use panel treatment in conjunction. This can be done by taking the four central parts of a room and making four panels, we'll say one the mantel breast of about three feet and the same on the wall opposite, as well as one between the windows, with one on the end wall to be the same, but cut at a different part of the design, so as to get a different effect. These four panels, flanked on the sides with panels of plain colors, framed up with a small band or moulding, make an effective decoration. Thus it will be seen that it is entirely within the province of the decorator to vary the handling of his friezes.

* * *

How to Select Your Own Decorations

By F. A. TAYLOR.

A MISTAKE made by many home builders is that of leaving until the last thing the highly important task of providing for the interior decoration. It seems to me that one of the very first things to demand the attention of the prospective home builder is the question of how the house shall be decorated.

Don't be backward about consulting your architect and interior decorator in the early stages of your house planning. Don't try to select too many rooms at one time, as confusion is likely to follow, especially if one is not accustomed to assembling colors. Judgment should be used in the selection of decorations for rooms adjoining each other. A clash of colors is especially to be avoided. Regarding furniture, there is an unfortunate tendency to overcrowd a room. Many a beautiful house has been spoiled by an excessive display of furniture.

One receives his first impression of a house upon entering the reception hall and if this proves to be ugly, difficulty is likely to be experienced in overcoming a general prejudice of all the other rooms. To my mind no more attractive reception hall can be made than one set off with mahogany furniture in easy form with dull blue covering, blue drapes with a touch of old gold for trimmings, an easy seat near a nook in the staircase with a green sofa cushion lying loosely on the seat and an old-gold footrest cast to one side, and a blue, green and mahogany rug showing a neat hardwood floor. Such a scheme should readily impress anyone and should prove an easy color effect to get.

The living room should have a soft brown coloring with a shade of

green or bronze green here and there to add life. Distinctive shades of old red and gold or copper make a beautiful dining room, while for the library Kentucky green on the walls, old ivory ceiling and wood work of bog oak make a pleasing combination, the latter room to be upholstered in tan leather.

Considerable care should be taken in the selection of fittings for the guest chamber. I would suggest a wall of ivory white with a soft, clear shade of yellow in some pleasing, graceful design, a touch of blue in the dresser cover as well as in the French pads on the chairs. Scrim bedspreads and curtains with an insertion of small yellow ribbon in a delicate Clunie lace, a blue carpet, willow beds and chairs complete the furnishings and should make a room in keeping with its name.

* * *

The Decorative Periods

By C. WALTER TOZER

ARTICLE III.

GRECIAN.

Graeco—Pelasgic, 1900 B. C.—1384 B. C.; Doric, 700 B. C.; Ionic, 600 B. C.; Corinthian, 290 B. C.; Hellenistic, 290 B. C.—168 B. C.
Etruscan, 1040 B. C.—238 B. C.

THE ancient Greeks received their first rudiments of art from the Egyptians. The old forms were changed and elaborated. The anthemion is one decorative device which is purely Greek. This, with the acanthus, can be traced through subsequent centuries in various forms, and we recognize it as one of the distinctive features of the Renaissance of three thousand years later.

The earliest and incipient period of Greek art is generally termed Graeco-Pelasgic.

The three purely Greek orders are the Doric, a development of the seventh century, B. C.; Ionic, a development of the sixth century, B. C.; Corinthian, a development of the third century, B. C.

Of all the ornamental styles which have been borrowed from plants the acanthus is the most popular. This was introduced by the Greeks, but it has been used repeatedly in innumerable other styles.

To the ornamental possibilities of its beautiful leaves is due its popular application. The acanthus was treated by the Greeks with sharp-edged, comparatively narrow leaves. The Roman style treated the tip of the leaves rounder and broader. The Byzantine and Romanesque styles again returned to stiffer, less delicate forms, and the Gothic gave the leaf large, round bulbous forms.

In the Grecian borders and Grecian friezes lay much of the dominant characteristic of Grecian decoration. Seldom were Grecian designs of an all-over character. The mural character was undertaken usually in borders or friezes. The present-day stencil form suggests the character of the work. Their lines were little shaded. The Grecians took squares and built within them. They never indulged in broad sweeps. In this way the Greek fret was a design of squares, a lasting feature modified and elaborated by innumerable touches.

The Greek school is purely classical. The term classical in a strict sense is applied to the best periods of ancient Greek art, and to the Roman arts, where the Roman work is the result of a direct following of Greek art.

The Etruscans, apparently, were a people of a northern race whose art closely resembled Greek. Living north of Rome, they were subdued and

assimilated in 280 B. C., after a series of wars with the Romans, lasting through the fourth century, B. C.

The early Roman art was influenced by the Etruscan; later Roman art by the Greek. The Romans, being too busy building a world empire, did not develop an independent art. However, after they had assimilated the Greek cities of Italy and Sicily and of the Peloponnesus and the country to the north—in the third and second centuries, B. C.—the new conditions under which Greek artists worked and the immense size of the buildings that were demanded by the world-conquerors created a distinctive Roman—or Graeco-Roman—architecture and ornament. With the spread of Christianity it became transformed into Christian Roman (Mediaeval Roman or Byzantine) art, whose most famous periods are those of Constantine and Justinian.

The square fret is nearly always associated with Greek art, but the Chinese used it two thousand years before, and the Japanese and Moors also utilized it in a modified form. The Greek wave and Greek guilloche can also be traced back to the Egyptian and Assyrian, and the use of the Celtic fret is also interesting in its relations to the Greek form.

Another symbolism, much used by the Greeks, and which one finds in the Persian as well as the Christian art, is the Tree of Life. It is naturally shown in different forms, the terminals showing sometimes the acanthus details, and sometimes cones or lotus buds entwined in vines. Although closely associated with ecclesiastical decoration and representing the genealogy of Christ, the symbolism is traced back to Assyria and Egypt, 2000 years before Christ.

ROMAN-POMPEIIAN

Roman—753 B. C.—455 A. D.
Pompeiian—100 B. C.—79 A. D.

The Roman Empire was the fourth great empire of antiquity, and was founded 750 B. C.

The Romans were at first dependent upon the Greeks, for want of an artistic style of their own, but they exaggerated the decorative treatment instead of following the simplicity of that style.

The style of the Romans is full of dolphins and winged horses and volutes, extravagant but beautiful in decorative imagination.

Because of their love for pomp and splendor, the Romans naturally had a predilection for the Corinthian order, which they elaborated with fine artistic feeling. The different forms of leaves are idealized in a manner so that their natural origin is hardly to be recognized. Motifs that were much employed were the acanthus, oak leaves, laurel, pineapple, vine, palm, ivy, poppy and rich floral, fruits and figure work.

In treating of the Renaissance period it is well to bear in mind all these characteristics of Roman art.

Studying the fine orders recognized in classical architecture, one is impressed by the unusual beauties embodied in the Greek, Ionic, Doric Corinthian and the Roman Composite and Tuscan. This latter being a form very similar to the Greek Doric. A certain class of people dislike the classic style, feeling that it lacks the pleasure-giving qualities of what is termed popular design. As a matter of fact the term classic is an expression applied to the highest type of art, and whether it is of music, literature or decoration, a thing that is classic is the most lasting. The Greek and the Roman styles have lived for centuries.

The beautiful details of the Greek and Roman decoration have been a source of joy to all lovers of the beautiful.

The Ionic style was introduced 600 years B. C.; the Corinthian, 290

B. C.; and it is the Corinthian style which appealed to the splendor-loving people of the Roman Empire and developed the Composite, which combined the Greek Ionic and Corinthian.

The Pompeiian closely followed the Roman. The Romans undoubtedly did the most beautiful form of mosaic work. They not only produced geometrical mosaics, as we observe in so many floors excavated at Pompeii, but flowers, animals, still life, human and divine figures, even completed pictures. Their materials were stones of different colors, mainly marble, and their designs were exquisite. The excellent wall paintings found at Pompeii and Herculaneum give an idea of the lost Grecian paintings, for most of the Pompeiian as well as Roman works are reproductions of originals by Greek masters.

In the Pompeiian house, the apartments were all without windows. The walls were divided into a dado, a middle and upper section. The dado generally having a black ground with simple ornaments or linear decorations.

The purple, green, blue or violet ground of the middle space was enlivened with one or more figures or landscapes having ornamental borders.

The upper space most usually was white, enlivened with graceful scenes in various colors. Some of the apartments, however, had the walls beginning with yellow dadoes and terminating with black friezes. In addition to very rich arabesques, there were garlands, fruit, masks, candelabra, animals, which imitating nature with great fidelity, arrested the eyes of the beholder. The walls invariably terminated at the top in a small painted stucco concave, from which the ceiling rose.

Fairmont Hotel, San Francisco. Opened April 18, 1907. One Year after the Earthquake and Fire
Lindgren-Hicks Co., Contractors *Reid Bros., Architects*

Among the Architects

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Next Convention at Chicago, Illinois

San Francisco Chapter of American Institute of Architects

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State Board Holds Biennial Election

The annual session of the northern and southern district branches of the State Board of Architecture was held in San Francisco April 10.

The board held its biennial election of officers and re-elected the retiring members as follows: Northern district—H. A. Schulze, president; Lionel Deane, secretary and treasurer, and Seth Babson, William Curlett and Clinton Day as additional officers. Southern district—John P. Krempel, president; Frederick L. Roehrig, secretary and treasurer, with Octavius Morgan, Sumner P. Hunt and William S. Hebbard additional officers.

At the termination of business an informal meeting was held, at which there was a discussion on architecture in general and the State law as applied to the profession.

The members of the southern district who attended were Octavius Morgan, John P. Krempel, Sumner P. Hunt of Los Angeles, W. S. Hibbard of San Diego and Frederick K. Roehrig of Pasadena. The northern district was represented by Henry A. Schulze, William Curlett, Lionel Deane, Clinton Day and Seth Babson.

The visitors were entertained by Clinton Day at luncheon at the Pacific Union Club, and were the guests of President Henry A. Schulze at a dinner at Tait's. Those present being former Governor George C. Pardee, Octavius Morgan, Seth Babson, Frederick L. Roehrig, William Curlett, Sumner P. Hunt, Lionel Deane, William S. Hebbard, John P. Krempel, Clinton Day, Walter Matthews, Louis C. Mulgharte, John Galen Howard, Albert Pissis, Sylvian Schnaittacher, William Mooser, D. Franklin Oliver, L. E. Stanhope, Merritt J. Reid, James W. Reid, T. J. Welsh, Bernard R. Maybeck, Albert Sutton, H. Garden Mitchell, W. D. Bliss, Charles L. Havens, Henry Geilfuss, Edmund Kollofrath, William Knowles, Henry H. Myers, Frederick D. Boese, Walter Brann, Herman Barth, B. P. Trowbridge, L. B. Dutton, Arthur Brown, Jr., Nathaniel Blaisdell, Charles W. Dickey, Matthew O'Brien, E. C. Bolles, E. J. Vogel, George P. McDougall, Lewis P. Hobart and Joseph E. Haskins.

Architects Wanted to Plan New City Hall

Designs for a new City Hall to cost $100,000 are to be advertised for by the Berkeley Town Trustees. The building will be erected on Grove street, between Allston way and Center street, and will be a two-story Class A structure. Competitive designs will be received until May 13th.

Head of Big Construction Company Here

A. M. Stewart of New York, the contractor who made a great reputation in England by constructing the $5,000,000 Midland Railway Hotel in Manchester and the $2,500,000 Savoy Hotel in London, each in fifteen months, when the Britishers estimated the work would take five years, is in San Francisco.

Mr. Stewart's company has signed the contract for the rebuilding of the Parrott building, which is to be done September 1, 1908. He has also secured the contract to build a ten-story structure for Mose Gunst at the southwest corner of Geary and Powell, to be done January 1st of next year, and an eight-story building for Gunst at the southwest corner of Mission and Third streets, to be done September 1st. He is reconstructing the Temple Emanu-El, to be done June 1st, and made all one story, the basement being eliminated. He is to erect an eight-story building for Thomas Williams on the southeast corner of Mission and Third streets, to be done October 1st; an eight-story building for Sanford Sachs on the north side of Geary street, between Grant avenue and Stockton street, to be done April 1, 1908, and he is to build the Orpheum, which will be ready a year from next Christmas. Gunst's building opposite the St. Francis and Sachs' building on Geary street may be raised to twelve stories each, now that the height limit has been removed by the Supervisors. All his contracts but the synagogue will be for Class A structures.

Fine Library for University

The Board of Regents of the University of California has voted to begin at once the erection of the new library building from plans by Architect John Galen Howard. They call for a fireproof structure of white granite, like that used in the California hall and the mining building, and the outline of the Hearst plans is followed.

The new structure will cost $575,000, which will be paid from the Charles Franklin Doe estate. The building will be located between California hall and North hall, and when, in the course of time, North hall is replaced by a new building of the same type as the others, the three structures will form a harmonious group.

New City of Leland

Much interest is being taken in the proposed new city of Leland, to be built by well-known capitalists near the Leland Stanford University. The project is being promoted by the Leland Improvement Company which has opened offices in the Grant building at Seventh and Market streets, San Francisco.

As a commencement $1,500,000 is planned to be expended for development the ensuing year. There are thirty-seven miles of streets laid out in the new city to be improved, the paving of which with asphalt and macadam will cost over $1,000,000 and nearly the same sum is to be applied for sidewalks, gutters, palms and other ornamental trees and shrubbery. A hotel is to be constructed of reinforced concrete and five stories in height, with a roof garden extending over the whole hotel area.

Architect for Grace Cathedral

George F. Bodley of London has been selected by the Grace Cathedral corporation as architect of the new cathedral and other buildings to be erected on the site donated for that purpose on Knob Hill, San Francisco, by the Crocker family. Lewis P. Hobart of San Francisco will be the architect's local assistant.

George F. Bodley has a world-wide reputation. Fellow craftsmen consider him England's greatest authority on Gothic architecture. Not long ago he was chosen architect for the cathedral in Washington, D. C.

Courthouse Plans Changed

The Sonoma County Board of Supervisors have adopted revised plans for the proposed County Courthouse at Santa Rosa, and bids will be received up to Saturday, May 11th. Bids were opened last week under plans by which the bidders declared the building could not be completed for less than $380,000, while only $280,000 bonds and $15,000 premium are available. All bids were rejected and the plans changed by Architect Dolliver of the Atlas Building, San Francisco.

The new plans call for reinforced concrete, faced with terra cotta or cement, while the former ones required Colusa sandstone. The finishing is now to be in metal instead of oak or Oregon pine.

New Architectural Firm

Edward J. Mayberry and Llewellyn A. Parker, architectural engineers, announce that they have established an office for the practice of structural steel and reinforced concrete engineering at 372-373 Pacific Electric building, Los Angeles. Both are graduates of the Massachusetts Institute of Technology.

To Repair Postoffice Building

Superintendent of Buildings Roberts of the San Francisco Postoffice, has been notified by the Supervising Architect in Washington, to prepare specifications and get bids for the repairs to the exterior of the San Francisco Postoffice, and all the repairs to the Mint and the Appraiser's warehouse. There is money on hand, appropriated by Congress, to do this work, which will be ordered as soon as satisfactory arrangements can be made to do it.

The Supervising Architect has held up the repairs to the interior of the Postoffice building until he could come here and make a personal inspection of the damage.

He says no steps have been taken yet to build a new Sub-Treasury building, and it is likely that the old one will be occupied until next summer. The Congressional delegation from California has been united in opposing the construction of a building on the two lots which can be bought for the $128,000 which Congress authorized to be expended for a site. That would leave $247,000 for the building, and it was intended to put up a four-story commercial structure with that sum, the Sub-Treasury being on the ground floor. But if Congress will give the money for a bigger site and a better building the Treasury Department will gladly make plans for a better structure.

Height Limit Removed

An ordinance removing the height restriction upon Class A buildings has been passed by the San Francisco Board of Supervisors.

The section of the building ordinance which has restricted Class A buildings to one and a half times the street width has been stricken out and replaced by the following:

"Section 41. Class A buildings shall be built with a steel frame supporting all wall and floor loads. The structural parts shall be built of incombustible materials. Class A buildings may be built anywhere in the city and county, and no restriction as to height shall apply to buildings of this class."

One or two verbal changes in succeeding sections of the ordinance were also made, merely to bring them into harmony with the above.

The height limits on Class B and Class C remain unchanged, and the whole ordinance in every particular remains as before, save for the striking out of the height limitation on Class A structures.

Architect for Oakland's Great Hotel

Henry J. Hardenbergh, architect of the Waldorf-Astoria and Manhattan hotels of New York and the New Willard of Washington, D. C., has been selected to design the $2,000,000 hostelry which will be erected at Thirteenth and Harrison streets, Oakland. Hardenbergh and his chief assistant are already on the coast. It being the former's intention to direct the work of construction personally. The preliminary draughting has been done by Architect Walter J. Mathews of Oakland. Mathews is supervising architect for the company. The hotel will be erected on the block bounded by Thirteenth, Fourteenth, Harrison and Alice streets. A syndicate of Oakland bankers and capitalists holds most of the stock, the demand for which caused the directors to increase the capital to $2,300,000.

Bids Wanted for School Houses

The Board of Education of San Jose, asks for bids to be in May 15 for the erection of the following buildings:

High school, F. S. Allen, architect, $175,000.

Grant school, Wolfe & McKenzie, architects; F. S. Allen, supervising architect, $50,000.

Lowell school, Binder & Schumacher, architects; F. S. Allen, supervising architect, $50,000.

Longfellow school, Mr. George W. Page, architect; F. S. Allen, supervising architect, $50,000.

Horace Mann school, Stone & Smith, architects; F. S. Allen, supervising architect, $50,000.

Addition to Washington school, F. S. Allen, architect, $15,000.

There will also be installed in all of these buildings up to date systems of heating and ventilating; program clocks, venetian blinds and laboratory furniture.

Bids Prove Too High

All bids for construction work on the new Polytechnic High School at Berkeley exceed the appropriation of $150,000 and the plans will either have to be redrawn or new bids asked for. Bids on the percentage basis may be requested if the Town Attorney advises that such a proceeding is legal. The Board of Education is now awaiting his opinion.

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OFFICES
621 Monadnock Building - San Francisco
Telephone Temporary 1928
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423 Lumber Exchange Building, Portland, Or.

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The press has done splendid work in combating patent medicines and other great abuses, but none of these, in my estimation, equal in sinister and far-reaching results the insurance habit into which our people have drifted or been beguiled, says Architect F. W. Fitzpatrick in a recent issue of Inland Architect. Though fire insurance was primarily established as a wise and beneficent safeguard against possible accident, it has grown to be a gamble of vast proportions and most insidious ramifications.

THE FIRE INSURANCE HABIT

But a few years ago the companies figured up their ratio of losses versus premiums scientifically and all that sort of thing, but paid only scant attention as to how buildings were built and how cities were managed from the view point of fire-prevention; today their engineers are among the most skillful in the country and know what constitutes good construction. But the local agents of the different companies were only interested in premiums, not in good building, and they turned heaven and earth to get their companies to accept what everyone knew was a poor risk. What was the consequence? Poorly constructed and ill-protected structures have been insured at such rates that the propagation of their species appeared to be profitable.

This condition of affairs prevailed here in San Francisco before the fire. A ridiculously low rate was made on buildings here, practically a 90 per cent frame risk, because our city possessed an excellent fire department. Now that the city has been destroyed, the rates have gone up on everything new and old, in addition to a general increase almost everywhere else. Yet our people do not seem to understand that good, sound fireproof construction is the best insurance.

Are we taking steps to prevent such an occurrence in the future? Are we building our structures of steel frames, protected from rust with cement and from fire by hollow tile fireproofing? Are we cutting off story from story by enclosing elevator and stair wells, so that those conductors of fire may be closed off and are we taking the other precautions that would render the city immune to the blight that only a year ago almost totally destroyed it? No, except in comparatively few instances.

In San Francisco at this moment there is a demand for 2,000,000,000 feet of lumber, something like $40,000,000 worth. What for? For more shoddy though well-insured construction, more fuel for the fire that follows the next earthquake.

Three years ago Architect Fitzpatrick, on behalf of the Associated Building Department of the principal cities of the world, made a most exhaustive inspection of our chief cities and then prophesied that the next great conflagration would be in New Orleans or San Francisco, both of those cities being the shabbiest built in the country and presenting the greatest vulnerability to fire. San Francisco has paid the penalty for her folly of poor construction. Lately Captain Sewell has made a similiar inspection of the cities on behalf of the United States Government and in his report says: "In New Orleans the conditions are so bad that it would seem that the city ought to have burned before this, yet, granting that a conflagration is once started, it is doubtful whether it would sweep the old and ill-conditioned buildings in New Orleans any more completely and rapidly than it would the sprinklered, mill-constructed risks in St. Louis and Chicago."

THE CITIES IN DANGEROUS CONDITION

Apparently New Orleans is the poorest built city in the country, yet in all our cities there are vast numbers of wooden- joisted and mill-constructed buildings ever ready for complete combustion, abundant fuel for an appalling conflagration. It surely is time to absolutely bar everything but steel and hollow fire-proofing tile and brick and other at least incombustible materials, from new buildings and to compel the owners of old ones to make such alterations as will, at least, minimize the danger of fire.

The Architect and Engineer is making a fight for better inspection of steel and iron for Class A and other buildings. It is an open secret that some very bad material is being turned out on the coast and the people who are at fault must expect a grilling if conditions do not improve. We offer herewith a few hints on shop inspection which may serve some of our readers to good advantage:

SHOP INSPECTION OF IRON AND STEEL

The duty of the inspector at the shop is to watch the work as it proceeds through the various stages, to see that the material is not injured in any way and that the workmanship is good. He should have a copy of the specifications, a bill of the materials, and a complete set of the working drawings, and should examine closely all finished parts, check the field connections, and have all errors corrected.

Any material which may have been bent in handling, should first be straightened before being laid out, and again after punching, if it has been buckled during the process. If this is not done, oftentimes in assembling different pieces, they cannot be made to fit properly, are difficult to draw together with bolts, and the spring in the iron is likely to loosen some of the rivets. In punching, the dies should be examined occasionally, to see that the edges are sharp and unbroken, and the diameter of the lower should not exceed that of the upper by more than 1-16 of an inch.

In assembling and fitting up, all

parts coming in contact should be well painted and care should be taken to get each piece in the proper place, to see that web-splices and all abutting sections close tightly, and that plenty of bolts are used to draw and hold the various parts in position. If the holes do not match exactly, they should be reamed, and not "drifted," as is often done, as this enlarges and injures the metal around the hole.

Where field riveting is to be done, the parts should be fitted together in the shop and reamed, or where this is impracticable, an iron templet should be made and the parts reamed to fit it. After the rivets have been driven, they should be tested, and if any are found to be defective, they should be taken out and replaced. Caulking or recupping loose rivets should not be allowed, as this only bends or wedges the rivet, and does not make it any better. In facing members, care should be taken to get the exact length and bevel desired, and the inspector should compare his steel-take occasionally with the "standard" at the shop, to see that they agree. As parts are finished, they should be carefully examined and measured, and if in accordance with the drawings and specifications should be marked with the stamp of approval.

E. O. RITTER.

Every Man to His Trade

"It's a wonder them street cleaners doesn't git run over."

"I'd hate to have their job. I'd be scared stiff all the time."—Life.

Book Reviews

"Modern Plumbing Illustrated"—A comprehensive and thoroughly practical work on the modern and most approved methods of plumbing construction. The standard work for plumbers, architects, builders, property owners and for boards of health and plumbing examiners. By R. M. Starbuck, Author of "Questions and Answers on the Practice and Theory of Sanitary Plumbing." "Questions and Answers on the Practice and Theory of Steam and Hot Water Heating," "Hot Water Circulation Illustrated," "Examination Charts for Boards of Health," "Examination Charts for Plumbers' Unions," "The Starbuck Plumber's Estimate Book," etc. Fully illustrated by fifty-five full-page plates, made expressly by the author for this work. New York: The Norman W. Henley Publishing Company. One large 8vo. volume; cloth; pp. 392. Price, $4.00.

This work is an eminently practical work, representing the best modern practice in plumbing and water supply. Naturally, the questions of drainage and sewerage occupy first place. On these questions the author has followed the requirements of the City of New York and other important cities, as well as the requirements of the United States, in all matters of drainage and sanitation.

A special feature of the work is the liberal scale drawings, which cover almost every imaginable condition likely to come before the plumber, architect or sanitary engineer.

"A History of the Earthquake and Fire in San Francisco"—a comprehensive account of the entire disaster; as accurate as science; as thrilling as romance. By Frank W. Aitken and Edward Hilton, San Francisco. The Edward Hilton Company, 876 Eddy street. Price, $1.50 the volume, 285 pages, 122 illustrations.

The story of the calamity is told interestingly, and with painstaking attention to detail. Scores of half-tone engravings of the stricken city before and after the earthquake, during the progress of the fire, and of the ruins, illustrate the handsome little volume.

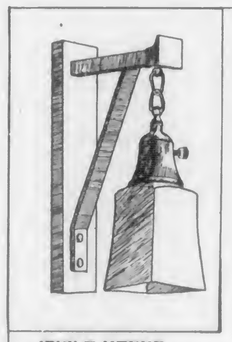
The Publisher's Corner

Decorative Work by the J. Llewellyn Company

April 18th was the date set for the reopening of the Fairmont Hotel—just one year after the fire which destroyed its former interior beauty. The outward appearance of the building has not been altered though the interior has seen many changes both architecturally and decorative. The plans for the interior changes in the rooms and corridors of the upper stories, were made by Architect Julia Morgan. The J. Llewellyn Company of San Francisco and Oakland had the contract for the decorating of the wings, basement, mezzanine floor and upper stories, while the principal rooms of the main floor were done by Baumgarten & Company of New York.

The color scheme of the work done by the J. Llewellyn Company on the lower floors is ivory white, while the woodwork in the upper stories is mahogany. Imported wall coverings were used in the suites and individual rooms, they having been purchased under the direction of Mr. Schastey, formerly of the firm of Baumgarten & Company but now managing head of the firm of Schastey & Vollmer of San Francisco.

The new Key Route Inn at Twenty-second street and Broadway, Oakland, to be opened in the near future, is a handsome three-story structure following the old English style of architecture. The interior decorating was done here also by the J. Llewellyn Company. This



concern has lately closed some large contracts for decorative work, which speaks well for its ability. A radical departure in decorative schemes has been followed in the Key Route Inn, the upper stories being treated in "group" tinting. Pastel shades of brown, grey, blue, green, yellow and cream for the walls were used, while the woodwork has been done in ivory white, giving a decidedly light effect to all the rooms. The main floor is severely English to its smallest details, even to the shields on the elevator screening.

One departure, however, has been made on this floor, that being in the ladies' parlor. This has been done entirely in grey, walls and woodwork being the same shade. Oakland may well be proud of this handsome hostelry, the plans for which were prepared by Oliver & Foulkes while Vietch Brothers were the contractors and general superintendents of construction.

Schroth Building to Be Ten Stories

The Schroth estate has decided to go ahead with the erection of an office building facing Union Square. Before the fire it was planned to make this building eighteen stories high. The architects, Cunningham & Politeo, have redrawn the plans, which call for a ten-story Class A structure, which will cost as much under the changed conditions as eighteen stories would have cost before the earthquake. Bids for this building, which will have a handsome brick and terra cotta front, are now being taken.

Bids are being taken for the erection of the new Phelan building, at Market and O'Farrell streets. William Curlett is the architect. The entire exterior is to be of handsome terra cotta.

Coming Art Exhibition

The Los Angeles Architectural club and the Arts and Crafts society of Los Angeles propose giving a joint exhibition the week of May 20th.

This is the first annual exhibit of the club, and its members wish to make a strong appeal to architects and designers to aid them in making it a success by submitting some of their work.

The exhibit will include drawings in plan, elevation, section, perspective and detail, illustrative of structural, decorative and landscape architecture; photographs of executed or proposed work, sketches and paintings of decorative subjects. Contributions in any of these lines are cordially invited.

All accepted exhibits must remain until the close of the exhibition. Where possible, drawings must be either framed or mounted. Borders and mats should be reduced to a minimum. If practicable, the omission of glass is requested on all exhibits. Exhibits must bear the name of the designer.

The following committee will pass on drawings submitted:

Elmer Grey, Los Angeles.
Augustus B. Higginson, Santa Barbara.
Timothy Walsh, Los Angeles.
Chas. Sumner Green, Pasadena.
Irving J. Gill, San Diego.
Arthur Roland Kelly, Los Angeles.
Theo. A. Eisen, Los Angeles.
Frank Stiff, Los Angeles.
Francis Pieriepont Davis, Los Angeles.

All exhibits must be delivered prepaid by exhibitors on May 11th, at the Associated Arts Hall, 718 S. Spring street, Los Angeles. Those drawings accepted from out-of-town points will be returned prepaid by the club.

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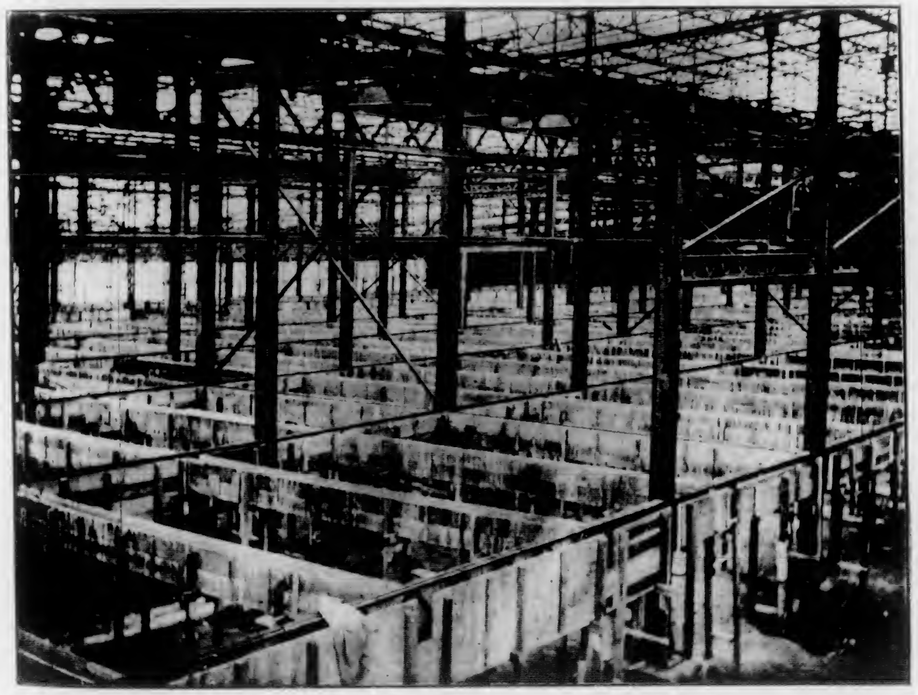
The Concrete Company

This month there is welcomed to the field of building activity a new constructor in the person of the concrete company under which firm name Mr. Wm. Ham. Hall and Mr. L. J. Mensch have made a combination as Constructing Engineers. These men claim to be expert specialists in the engineering and building uses of steel and concrete, and they are. They undertake to treat their building operations as engineering jobs and to personally supervise them as such. This is just what owners and architects are demanding in contractors before many more reinforced concrete buildings are offered for figuring. The reinforced concrete boom seems to be merging into a wail at inconsistent design, unfit construction and unfitting supervision.

Mr. Hall is a reinforced-concrete propagandist of long standing on this Coast; having while State Engineer, been a chief supporter of George W. Percy, Architect, in his advocacy of that construction and introduction of it, with Mr. E. L. Ransome of the twisted bar, over twenty years ago. A user of much concrete in engineering construction, Mr. Hall has persistently argued for the use of reinforced concrete on this Coast ever since. Five years abroad in professional work enabled him to bring back a great experience and fund of data from observation in concrete and reinforced concrete work. But not until after our great earthquake and fire was the soundness of Mr. Hall's advocacy acknowledged. When the last brick had fallen and the smoke had cleared away, there appeared a series of notable articles in one of our leading dailies pointing out the lessons of the earthquake and fire, and from these articles of Wm. Ham. Hall grew the confidence in reinforced concrete which later



UTAH COPPER COMPANIES WORKS, GARFIELD, UTAH.

This Cut Shows the Forms for a Supported Reinforced Concrete Floor, About 600x400 Feet in Extent, and Built to Sustain Heavy Shaking Stresses. L. J. Mensch (The Concrete Company) Designer and Builder.

resulted in passage of the new ordinance allowing its use in city building. The president of the Public Works Board has said, in an interview with some engineers and architects, that "if any one is responsible for the introduction of reinforced concrete here, it is the committee of architects and engineers, of which Hall was chairman, who advocated it before the Board of Supervisors." We are thus warranted in placing this meeting of the concrete company among those recognized as authority on this subject. Many engineering works, not only in our country but abroad, attest to Mr. Hall's success as a constructor; and the high esteem in which he is held personally and professionally, by many who should know, ought to impart confidence in the work of his new company.

Mr. Mensch is not known here, but in Chicago, Cincinnati, Toledo, St. Joseph, Salt Lake City and elsewhere he is known to many architects and engineers as a long-time practitioner in reinforced concrete design and a constructor of much experience in that work.

No less than thirty-four letters have been received in reply to disinterested and critical inquiries made as to Mr. Mensch; twenty-four of them from architects and engineers with whom or under whose engagement he has designed and constructed in reinforced concrete. Eight of the balance are from managers of great industrial works and establishments for whom he has built; one from a great contracting firm, and one from a Surety Company. They make a remarkable showing in Mr. Mensch's favor as a designer in reinforced concrete and as a contractor in that material. It is always difficult to get unqualified strong endorsement of an engineer or architect from his fellows. Mr. Mensch seems to have established a remarkably good standing with his fellow professionals. Such endorsements count for much in a specialty like reinforced concrete engineering and building.

Five office buildings, ten storehouses and warehouses, four large stables and barns, seven large factory buildings, five convent and other special buildings, three theaters, halls and music halls, four large tanks and swimming pools, a large number of notable foundations and foundation walls, and twenty-four unique stair-flights, a little flock of tall chimney stacks and an immense area of flooring and supported sidewalk work, all in reinforced concrete, stand to Mr. Mensch's credit, without an accident, today; and these do not include a vast amount of specially difficult industrial work construction, planned and executed by him in reinforced concrete, for the Kimberly-Clark, the Paper Trust, people, the Proctor-Gamble Ivory Soap people and the Utah Copper Company, of the Guggenheim control, for whom Mr. Mensch is just completing an immense reinforced concrete work in what is to be the largest Copper concentrating works in the world.

The concrete company ought to be able to establish very much confidence in its work, and not a few architects and engineers will look to it to uphold on this Coast a high standard in reinforced concrete construction.

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Steel Construction
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Telephone Temporary 902

C. I. Chubbuck a Benedict

The many friends of C. I. Chubbuck, of the firm of Chubbuck & Harris, will be pleased to learn of his marriage on March 13th to Miss Anita Sullivan, of 119 Belvedere street, San Francisco. The ceremony was performed at the bride's home by the Rev. Jerome Hannigan. Miss Imelva White and George Wagner stood up with the happy couple. Mr. and Mrs. Chubbuck went as far East as Kansas City on their honeymoon.

Richter Manufacturing Company

Messrs. Haas & Leonardt, of the present firm of R. & D. M. Leonardt, are no longer the Pacific Coast agents for the Richter burlap, canvases, etc. The company is sending Mr. Freeman from the New Jersey office over this territory.

Trade Note

R. C. Smoot of San Mateo is doing all the plumbing, steam heating and sheet metal work for the new Peninsula Hotel at San Mateo.

In New Quarters

The Oakland Roofing and Paint Company is occupying its new building at 1788 and 1790 Telegraph avenue, near 34th street, Oakland. The officers are naturally elated at having a home, exclusively for the company's use. A successful business has made possible the new quarters, which are well appointed and sufficiently commodious to answer all needs of the company for some time to come. The company is prepared to give estimates on roof painting and repairing, and laying both pitch and gravel roofs.

Wright Hardware Company in Business Again

The Wright Hardware Company is again doing business within a stone's throw of the old location on Third street. Mr. Wright was fortunate in securing a desirable lease of a store at 77 Third street, which is almost opposite his former place of business. A complete line of Russell and Erwin hardware has been installed and Mr. Wright will be pleased to supply the trade with the same promptness and satisfaction that marked his business dealings before the fire.

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PARKER WATER TUBE BOILER

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WRITE FOR CATALOGUE

When writing to Advertisers mention this Magazine.

Stone for Los Angeles New Federal Building

The matter of the selection of building stone for the proposed court house and post office building to be erected by the government in Los Angeles, appears to have been definitely settled. State Mineralogist Aubury has received a letter from Senator Flint, in which he states that there is no likelihood of stone other than California stone being used in the building.

Mr. Aubury suggests to all producers of granite, sandstone, limestone, marble, terra cotta, brick, tiling, cement,

Phone. Franklin 1976

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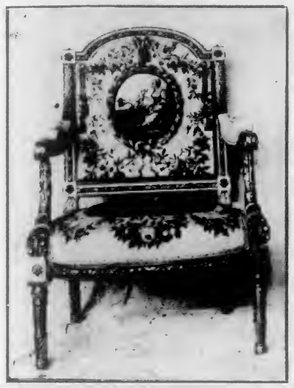

Louis XVI Chair, from Palace at Versailles

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gypsum and all other classes of material which would enter into the construction of large buildings, to send to Supervising Architect Taylor at Washington, D. C., a fair sized sample of their product, accompanied by a letter describing the locality in which the substance is produced, the estimated amount of material in sight, or which can be produced, the distance from railroad or water transportation, the price at which the substance can be placed f. o. b. at railroad or water point of transportation; also any physical tests which may have been made on the substance, and any other information which would assist Mr. Taylor's department in making selections.

W. P. Fuller Building in Oakland

Plans have been completed for a new building for the W. P. Fuller Company, the wholesale paint and oil concern, to be erected at Tenth and Alice streets, Oakland. The contracts have already been let, and the work will be commenced at once. The plans provide for a three-story brick building, 100 by 300 feet in size. It is expected that the structure will be ready for occupancy by the first of the year.

W. W. BREITE, C. E.
Structural Engineer
Designs and Details of
All Classes of Metallic Structures
Now Permanently Located at
Rooms 401-403-405 Jefferson Square Building
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An Index to the Advertisements

New Advertisers Not Noted Here Will Be Classified Next Month

Interior of Ralston Iron Works' New Plant

Ralston Iron Works' Big Plant

Few San Francisco concerns have shown greater enterprise or met with more notable success than has the Ralston Iron Works. Before the great fire a year ago the company occupied more or less cramped quarters on Howard street. With the passing of the conflagration little remained of the old shops outside of a few twisted girders and heaps of ruined machinery. One of the last jobs that the Ralston Company filled prior to the earthquake and fire was the steel frame for the California Casket Company's eight story building on Mission street, Albert Pissis, architect. No better example of the superior qualities of steel to resist earthquake and fire is to be found in all San Francisco than in this big building. The structure stands today as, indeed, it stood the day following the fire, a monument and a testament to steel frame and honest brick and stone construction.

Within four months after being burned out the Ralston Company was busy turning out material for the reconstructed city in its new shops at Twentieth and Indiana streets. With four times the room available in the old shops the company was in a position to contract for much big work and as a result some of the largest buildings now in course of erection in San Francisco have, or will have, Ralston iron and steel in them. The company was reorganized after the fire with H. J. Ralston president and Erskin Richardson secretary. The name Ralston was, of course, retained. H. J. Ralston's father having founded the company more than 30 years ago. The son has been identified with the company for 19 years. He is known among the architects and builders as a hustler and his thorough knowledge of the business enables him to meet his competitors with more than the average degree of success.

The new shops are 70 by 750 feet and the crane used spans the entire width of shop. Among the big contracts which the company has on hand at the present time are: Steel work for the eight-story building for Thomas Williams, and which is now being erected at the corner of Third and Mission streets from plans by Architect Clinton Day; six story building at Second and Mission streets; the Aronson building; the Building Trades Temple; Rudolph Spreckels' building and a number of other smaller structures.

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We carry a complete stock of
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Three-Story Frame Building

Architects Crim & Scott, of 1400 Webster street, San Francisco, are ready to receive bids on a three-story frame building to cost about $30.000, extending from Linden avenue to Fell street, near Gough, for which plans have been drawn for Mrs. Catherine Daley.

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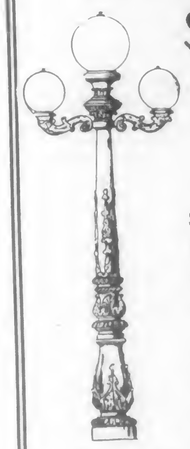

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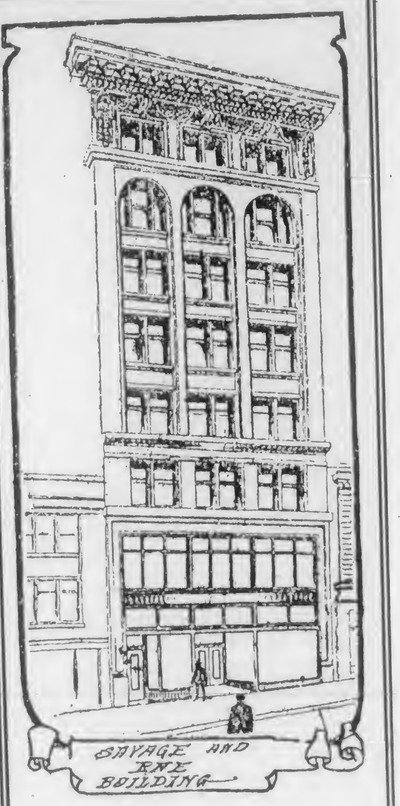

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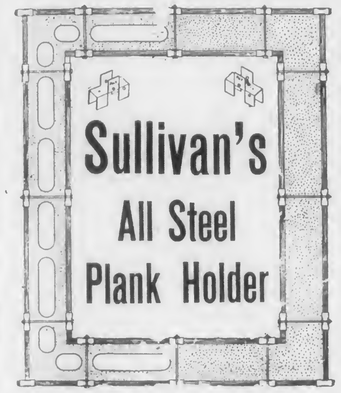

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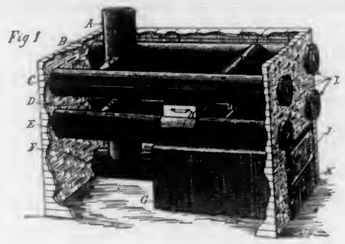

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