Bayo Vista and Oakland Ave., Oakland. To build; owner, J. P. Garlick, architects, A. W. Pattiani & Co.; contractors, A. W. Pattiani & Co.; cost, $4,767; signed, Feb. 17; filed, Feb. 24; payments, $1,200, rustic and shingles on and chimneys built; $1,200, brown mortar on; $1,067, completed; $1,200, 35 days.

roadway near Lincoln Ave., Alameda. Six-room cottage; owner, Frank J. Krauth; architect, C. W. McRhea; contractors, McRhea & McRhea; cost, $2,150; signed, Feb. 21; filed, Feb. 24; payments, $500, frame up; $500, brown mortar on; $500, completed; $650, 35 days.

dway near Ninth, Oakland. Carpenter work, etc.; owner, L. Friedmann; architects, Sulfield & Kohlberg; contractors, Concannon & Shay; cost, $6,235; signed, Feb. 19; filed, Feb. 27; payments, $1,000, roof on; $1,000, floors laid; $1,000, brown mortar on; $675, doors hung; $1,000, completed; $1,560, 35 days.

Broadway near Ninth, Oakland. Brick, stone and terra cotta work; owner, L. Friedmann; architects, Sulfield & Kohlberg; contractor, Alfred W. Burrell; cost, $3,160; signed, Feb. 19; filed, Feb. 27; payments, $750, ready for floor joists; $750, ready for ceiling joists; $860, completed; $860, 35 days.

Broadway near Ninth, Oakland. Cast and wrought iron work; owner, L. Friedmann; architects, Sulfield & Kohlberg; contractors, Judson Manufacturing Co.; cost, $1,362; signed, Feb. 19; filed, Feb. 27; payments, 75 per cent. after columns and girders are set; 25 per cent., 35 days.

Broadway near Ninth, Oakland. Plumbing and gasfitting; owner, L. Friedmann; architects, Sulfield & Kohlberg; contractors, Jeffreys, Mitchell & Co.; cost, $1,200; signed, Feb. 19; filed, Feb. 27; payments, $600, rough work in; $300, completed; $300, 35 days.

Cameron Tract, Brooklyn. Two-story frame; owners, Minna E. Wilson and husband; architect, Geo. A. Bordwell; contractor, C. L. Lombard; cost, $3,940; signed, Feb. 27; filed, Feb. 28; payments, $700, frame up; $650, brown mortor on; $750, plastered; $855, completed; $985, 35 days.

Corner Jackson and Seventh streets, Oakland. Alterations and additions; owner, Charles Purcell; contractors, Bowling & Rettig; cost, $2,075; signed, Feb. 13; filed, Feb. 14; payments, $550, building raised and frame of new story erected; $650 brown mortar on; $500, plaster; $375, 35 days.

Daly's Scenic Park, Berkeley. Two-story frame; owner, H. I. Coon; architects, Huerne & Everett; contractor, Herbert Kendell; cost, $2,715; signed, Feb. 20; filed, Feb. 20; payments, $400, rustic on and roof sheathed; $510, floors laid and roof shingled; $510, brown mortar on; $516.25, completed; $678.75, 35 days.

Eight street near Washington, Oakland. Alterations, etc.; owner, W. J. Dingee; contractors, W. T. Veitch & Co.; cost, $2,300; signed, Feb. 6; filed, Feb. 7; payments, 75 per cent. on the first day of each month as work progresses; 25 per cent., 36 75 days.

Eight Ave. near Eighteenth street, Oakland. Two-story dwelling; owner, Geo. H. Fowler; architect, Geo. W. Flick; contractor, Geo. W. Flick; cost, $2,350; signed, Feb. 27; filed, March 4; payments, $637, frame up; $637, brown mortar on; $637, completed; $639.35 days.

Elevanth Ave. near Clinton Town, Oakland. Three dwellings; owner, Frank Euch; architect, Elmer Childs; contractor, G. H. W. Beike; cost, $7,100; signed, March 5, filed, March 5; payments, $1,350, lumber on ground; $1,887.50, frame up; $1,887.50, brown mortar on; $1,775, 35 days.

Ellis and Mason streets, Oakland. Dwelling and barn; owner, Horace D. Irwin; contractors, Dirchsen & Roust; cost, $3,050; signed, Feb. 7; filed, Feb. 11; payments, $750, enclosed and roof on; $750, hard finish on; $750, completed; $800, 35 days.

Fifth street near Magolia, Oakland. To build; owner, Jas. McLean; architect, Jno. Conant; contractor, Jno. Conant; cost, $1,962; signed, Feb. 7; filed, Feb. 10; payments, $400, frame up; $450, ready for plaster; $400, plastered; $400, building ready for painters; $362, 35 days.

Forty-first street near Grove, Temescal. Two cottages; owner, L. Serda; architect Wm. Kirk; contractor, P. G. MacIntyre; cost, $2,270; signed, March 2; filed, March 2, paymen ts, $600, frames up and brick work done; $300, brown mortar on; $770, completed; $600, 35 days.

Golden Gate Tract, Golden Gate. One-story cottage; owner, Frank Richardson; architect, Lombard; contractors, F. M. Cramer & Co.; cost, $1,700; signed, Feb 16; filed, Feb. 16; payments, one-third, building enclosed and chimneys up; one third, completed; one-third, 35 days.

Hamilton Tract, Oakland. To build; owner, A. Steffanoi; architect, F. C. Bignami; contractor, F. C. Bignami; cost, $1,570; signed, Feb. 28; filed, Feb. 28; payments, $1,142, frame up; $1,142, brown mortar on; $1,145.50, completed; $1,142.50, 35 days.

Jones Street near Telegraph avenue, Oakland. Frame cottage; owner, Minna Frey; architect, Julius Frey; contractor, B. K. Allen; cost, $1,585; signed, Feb. 28; filed, March 2; payments, $600, frame up, roof on; $400, brown mortar on; $685, completed.

Lafayette street near R. R. avenue, Alameda. To build; owner, Geo. T. Wright; architects, A. W. Pattiani & Co.; contractors, A. W. Pattiani & Co.; cost, $2,400; architects, A. W. Pattiani & Co.; contractors, A. W. Pattiani & Co.; cost, $2,400; signed, Feb. 28; filed, March 4; payments, $700, rustic and roof on and chimneys built; $600, brown mortar on; $500, completed; $600, 35 days.

Linda Vista Terrace Tract, Oakland. Grading streets; owner, Chas. Camden; contractor, M. L. Gray; signed, Jan. 28; filed, Feb. 3, payments, 15th and 30th of each month, 75 per cent. of work done; 25 per cent., 35 days.

Linda Vista Terrace, Oakland. Two-story frame dwelling; owner, J. C. Hill; architect, Geo. A. Bordwell; contractors, Knight & Littlefield; cost, $3,125; signed, Feb. 17; filed, Feb. 19; payments, $783, frame raised and secured; $784, plastered; $784, completed; $784, 35 days.

Mountain View Cemetary. Burial vault; owner, Mrs. Hannah Adams; architect, Walter J. Mathews; contractors, Ranson & Cushing; cost, $12,993; signed, Feb. 18; filed, Feb. 20; payments, $1,918, 1-5 work done; $1,918, 2-5 work done; $1,918, 3-5 done; $1,918, 4-5 done; $1,918, completed; $3,293, 35 days.

Myrtle street, Oakland. Two-story building; owner, Ewing Marcuse; architects, Cary & Johnson; contractors, Marcuse, Lesser & Co., cost, $8,500; signed, Feb. 1; filed, Feb. 13; payments, $875, rustic and roof on; $875, brown mortar on; $875, completed; $875, 35 days.

Near San Leandro Lake, Oakland. Construction of a Hyatt Filter Plant; owners, Contra Costa Water Co.; contractors, Hyatt Water Co.; cost, $47,500; signed, Nov. 14, 1890; filed, Feb. 6; payments, ½ from time to time, according to terms expressed in agreement.

Oakland. One-story cottage; owner, Miss Annie E. Son; architect, F. Wells; contractors, Concanon & Shay; cost, $3,600; signed, Feb. 7; filed, Feb. 11; payments, $675, frame up and roof boards on; $675, ready for plastering; $675, plastered; $675, completed; $900, 35 days.

Oak Park, Alameda. To build; owner, Chas. H. Champion; architects, Judd, Hamley & Co.; contractor, John Sath; sureties, S. Stephenson and John H. Banta; cost, $2,000; signed, Feb. 24; filed, Feb. 26; payments, $725, frame up; $725, ready for plaster; $725, first coat of paint; $725, 36 days.

Pacific avenue near Jay, Alameda. Five-room cottage; owner, A. O. Ross; architect, C. H. Hunter; contractor, J. E. Henderlong; cost, $2,100; signed, Feb. 9; filed, Feb. 9; payments, $400, frame up; $400, rustic and frame set; $400, brown mortar on; $375 completed; $525, 35 days.

Regent street, near Central avenue, Alameda. To build; owner, M. S. Taylor; architects, A. W. Pattiani & Co.; contractors, A. W. Pattiani & Co.; cost, $2,834; signed, Feb. 19; filed, Feb. 24; payments, $800, rustic, roof shingles on and chimney built; $700, brown mortar on; $625, completed; $709, 35 days.

Rowland Tract, Oakland. Two-story house; owner, Geo. K. Porterfield; contractor, Chas. W. Bolles; cost, $3,200; signed, Jan. 30; filed, Jan. 30; payments, 1-5, building enclosed; ¼, brown mortar on; ¾, inside ready for painter; balance, 35 days.

San Antonio. To build; owners, Jas. H. and Eliza Shephard; architect, J. A. Eastman; contractor J. A. Eastman; cost, $2,275; signed, Feb. 10; filed, Feb. 11; payments, $568, frame up; $568, brown mortar on; $568, completed; $571, 35 days.

Sherman near King's avenue, Alameda. Two-story frame; owners, Mrs. E. and Wm. Bowers; architects, A. W. Pattiani & Co.; contractors, A. W. Pattiani & Co.; cost, $2,710; signed, Feb. 5; filed, Feb. 9; payments, $1,000, rustic and roof shingles on, and chimney built; $950, window frames set and brown mortar on; $810, completed; $930, 35 days.

Simpson avenue near Telegraph avenue, Oakland. Two-story dwelling; owner, Miss A. M. Hambly; architects, J. C. & E. A. Mathews; contractors Concannon & Shay; cost, $2,465; signed, March 4; filed, March 5; payments, $400, frame up and chimney built; $1,000, brown mortar on; $1,198.75, completed; $866.25, 35 days.

Sixth near Franklin, Oakland. Two-story frame cottages; owner, J. Pantoskey; architect, J. C. S. Whalen; contractor, J. C. S. Whalen; cost, $3,250; signed Feb. 5; filed, Feb. 6; payments, $800, frame up and roof on; $2,450, completed.

Thirteenth avenue near Nineteenth street, Oakland. Two-story frame; owner, Mrs. C. H. Elliott; contractors, Marshall & Liston; cost, $1,925; signed, Jan. 31; filed, Feb. 20; payments, $481.25, frame up; $481.25, brown mortar on; $481.25, completed; $481.25, 35 days.

The California Architect and Building News.

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OFFICE, 408 CALIFORNIA STREET, SAN FRANCISCO, CAL., U. S. A.

VOLUME XII. APRIL 20th, 1891. NUMBER 4.

A MONTHLY JOURNAL DEVOTED TO THE ARCHITECTURAL INTERESTS OF THE PACIFIC COAST.

Published on or about the 20th of each month by The California Architectural Publishing Company. The Stockholders being Architects and others interested in the profession.

SUBSCRIPTION TO THE JOURNAL, - - $3.00 PER YEAR IN ADVANCE.

ADVERTISING RATES:

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NOTICE.

Correspondents should address their communications to the *California Architect and Building News*, 408 California Street, San Francisco, Cal.

ASSYRIAN libraries have been discovered in the remains of the ancient city of Ninevah. The books are composed of tablets of clay, on which the characters were finely drawn when the clay was plastic. The pages are numbered, as are the books of to-day. After the tablets are baked they afford an almost imperishable means of communicating knowledge to futurity.

Why not prepare the master-pieces of the literature of to-day in such a manner for deposition in the corner-stones of our public libraries that are yet to be?

THE SENSE OF BEAUTY.

BY CHANNING.

Beauty is an all-pervading presence. It unfolds in the numberless flowers of the spring. It waves in the branches of the trees and the green blades of grass. It haunts the depths of the earth and sea, and gleams out in the hues of the shell and the precious stone. And not only these minute objects, but the ocean, the mountains, the clouds, the Heavens, the stars, the rising and setting sun, all overflow with beauty. The universe is its temple; and those men who are alive to it, cannot lift their eyes without feeling themselves encompassed with it on every side. Now, this beauty is so precious, the enjoyments it gives are so refined and pure, so congenial with our tenderest and noble feelings, and so akin to worship, that it is painful to think of the multitude of men as living in the midst of it, and living almost as blind to it as if, instead of this fair earth and glorious sky, they were tenants of a dungeon. An infinite joy is lost to the world by the want of culture of this spiritual endowment. Suppose that I were to visit a cottage, and to see its walls lined with the choicest pictures of Raphael, and every spare nook filled with statues of the most exquisite workmanship, and that I were to learn that neither man, woman, nor child ever cast an eye at these miracles of art, how should I feel their privation; how should I want to open their eyes and to help them to comprehend and feel the loveliness and grandeur which in vain courted their notice! But every husbandman is living in sight of the works of a diviner Artist; and how much would his existence be elevated, could he see the glory which shines forth in their forms, proportions, and moral expression! I have spoken only of the beauty of nature, but how much of this mysterious charm is found in the elegant arts, and especially in literature? The best books have most beauty. The greatest truths are wronged if not linked with beauty, and they win their way most surely and deeply into the soul when arrayed in this their natural and fit attire. Now, no man receives the true culture of a man, in whom the sensibility to the beautiful is not cherished; and I know of no condition in life from which it should be excluded. Of all luxuries this is the cheapest and most important to those conditions, where coarse labor tends to give a grossness to the mind. From the diffusion of the sense of beauty in ancient Greece, and of the taste for music in modern Germany, we learn that the people at large may partake of refined gratifications, which have hitherto been thought to be necessarily restricted to a few.

OLD MISSION CHURCH AT SONOMA, CALIFORNIA.

(CONTINUED FROM PAGE 27.)

The view here shown represents the building as it appears at the present time, the enclosure fence being omitted. The chapel at the farther end is of later date. The tiles of the roof show displacement at or near the lower portions of the roof, while at the upper portions the tiles remain intact as laid some seventy-five or one hundred years ago. They are without any fastening whatever, being laid on layers of brush as described on page 15. It may be well to suggest that possibly laying the tiles upon an elastic bedding may account for the freedom from breakage after so long a time, while modern tiles set upon a rigid bearing and fastened with cleats, nails, etc., show many fractures after a few years. The timber, boards, etc., were all cut and prepared in the redwood forests about twelve miles distant, and were then dragged upon the ground by the aid of horses, the rider slipping the noose of his lariat in the groove, cut near the butt end of each stick of timber, the other end fastened to the horn of the saddle. This groove is shown in figures 3 and 5, page 15. All the boards, planks, or larger pieces, show the wear on the side in contact with the ground. The larger bearing timbers are hewn to a square form, varying somewhat from a right angle. Planks and boards are hewn to the required thickness—planks one and three-quarter inches, and boards seven-eighths inches in thickness. Throughout the wood work there are no signs that a saw was used in any case, all the timber, planks and boards having been worked with a narrow faced axe, which was used with so much expertness that the planks and boards are quite as evenly worked as if sawed. Some of the boards are sixteen and eighteen feet in length and from eleven to twenty-two inches in breadth. There is no visible sign of such a tool as an auger or other boring instrument in the frame work of doors, all having been done with the axe, and perhaps a chisel may have been used in some cases The iron work for the hinges of doors and some of the small interior closets are of primitive workmanship. The sanitary arrangement and appliances were somewhat crude, but sufficient remains exist to show that this necessary department was not neglected. The first or ground floor being on a level with the ground outside, gutters or open drains (formed of burnt tiles) were run along under the eaves and connected with a covered drain run through the passage or driveway. This drain was eleven inches in depth by a width of twenty-two inches, the bottom formed of two and a half inch, seven by fourteen inch tiles, laid flat, the sides of same tiles on the flat, and four courses high, the top covered with redwood planks about three feet long and three inches thick, mostly decayed. This drain discharged into a large open ditch outside the premises. In the attic near the floor at the rear, a solid log nine inches thick and one foot six inches wide, the upper surface hollowed out to form a waste or soil pipe and run to the gutter at rear. Ventilation was secured by means of open doors and windows, the windows being provided with round, wooden bars three to four inches in diameter, and set horizontally at a distance of from four to six inches apart. In the kitchen or cooking room the fire was built at or near the center of the room. No signs of a chimney or fire place appears in any portion of the building, except one of recent date. The smoke from the kitchen fire found its exit through the barred windows near the roof.

H. T. B.

OLD MISSION CHURCH AT SONOMA, CALIFORNIA.

RADIATION IN ORNAMENT.

In the surface decoration of the Moors all lines flow out of a parent stem; every ornament, however distant, can be traced to its branch and root; they have the happy art of so adapting the ornament to the surface decorated, that the ornament as often appears to have suggested the general form as to have been suggested by it. In all cases, we find the foliage flowing out of a parent stem, and we are never offended, as in modern practice, by the random introduction of an ornament just dotted down, without a reason for its existence. However irregular the space they have to fill, they always commence by dividing it into equal areas, and round these trunk lines they fill in their detail, but invariably return to their parent stem. They appear in this to work by a process analogous to that of nature, as we see in the vine leaf, the object being to distribute the sap from the parent stem to the extremities, it is evident the main stem would divide the leaf as near as may be into equal areas. So again of the minor divisions—each area is again subdivided by intermediate lines, which all follow the same law of equal distribution, even to the most minute filling in of the sap-feeders. The Moors also follow another principle—that of radiation from the parent stem, as we may see in nature with the human hand, or in a chestnut leaf. The Orientals carry out this principle with marvelous perfection; so also did the Greeks in their honeysuckle ornament. And here we may remark a peculiarity of Greek ornament, which appears to follow the principle of the plants of the cactus tribe, where one leaf grows out of another. This is generally the case with Greek ornament. The acanthus leaf-scrolls are a series of leaves growing out one from the other in a continuous line, whilst the Arabian ornaments always grow out of a continuous stem. When styles become debased, neither of these laws are followed, as in Elizabethan ornament, where nothing is continuous, nothing radiates; all is haphazard.

Owen Jones.

A DISCOURSE ON CALCAREOUS HYDRAULIC CEMENTS.

BY CALVIN BROWN, C. E., U. S. N.

Mr. President and Gentlemen:—In accepting the polite invitation of the Executive Committee of your Society to address you on the subject of cements, I felt that in undertaking the task it would not be necessary for me to go into the matter to the full extent of its possible treatment. As engineers and architects, and in reference to the magnitude of its importance, applications in constructive works, all of you must have had considerable acquaintance with it, which supposition prompted me to limit what I ought to say more to my own experience than to attempt to lay before you, except in a very general and brief way, the details of its history, its chemical features and its economics.

Although the history of constructive engineering and architecture is marked by many interesting and even wonderful monuments of human skill, aided by science and genius, it appears to me that this nineteenth century in the discovery and application of hydraulic cements has far outstepped all previous centuries in the masonry of constructive works, taking into the account their utilitarian character, the rapidity of their erection and their comparative cost even, to say nothing of the surmounting of difficulties of location never encountered by the ancient builders. In all these results the application of hydraulic cements has entered, and the modern architect and engineer find in this material an ally whose help remained beyond the reach of their predecessors.

The ancients have been popularly credited with the possesion of superior cements, but as far as can be ascertained from history, and the investigation of their works yet extant, either whole or in ruins, there appears no evidence that their builders used any hydraulic cementing materials, except those found and applied in their natural condition after a simple pulverization, as pozzuolana, trass, etc.; all volcanic products which they mixed with common lime mortar to bestow a more rapid induration upon it and the capacity for hardening in damp situations or under water; they were not aware of, or at least they did not use, hydraulic limestone for the production of cement.

It was not until 1759, when the bold design of erecting a stone lighthouse upon the ocean-girdled Eddystone rock was undertaken by Smeaton, that the discovery was made by this able engineer of the existence of certain peculiar limestones, which, when calcined and pulverized and made into mortar possessed cementing qualities with the important characteristics of setting and hardening under water. His report of this discovery is given in the quaint language of old times: he says these stones after they are burnt and ground "afford a paste which hardens in a few days under water, but in the air they never acquire much solidity." It is reported that Smeaton discovered the causes of hydraulicity in limestones, but I do not remember the explanation he gave of it, but am impressed with the conviction that its complete description was given by very much later investigators. Smeaton used the natural products pozzuolana and trass for his cementing materials, but it is believed that for the strength of his great structure he relied more upon his system of dove-tailing the stoues in the work than upon the cement he put between them, which evidently was applied to bed and perfect their joints and so far prevent the water of the ocean from penetrating the masonry and thus preventing its hydrostatic effects.

It does not appear from any records I have been able to meet that much progress was made in the practical development of calcareous hydraulic cements until about 1780, when Dr. Higgins, of England, published a small treatise on what he called "water cements." If I recollect rightly he used common lime mortar treated with certain materials that conferred slight hydraulicity, such as pounded brick, etc. Sixteen years after this, or in 1796, a quick-setting hydraulic cement, resulting from the ordinary processes of burning and grinding certain limestones, was introduced by Parker, of England, and patented by him; he called this Roman Cement, under which name the article has continued in use down to this day, illustrating the charm of an impressive cognomen.

From the date of Parker's discovery forward, much attention seems to have been given to the search of limestones capable of furnishing a similar material, the general interest therein prompting several savans in England and on the Continent to engage in the work, the most conspicuous among them being the engineer J. L. Vicat, of France, whose elaborate researches commenced about 1812.

Vicat's well known publication shows how exhaustively he pursued his experiments, going into all the details of manufacture, manipulations and application of calcareous mortars, both hydraulic and non-hydraulic. Originally confined to the examination of materials which, taken in their natural state, yielded by the ordinary processes of calcination and pulverizing, cements of various qualities as to their powers of induration and hydraulic energies, his operations finally resulted in the grand discovery that although nature furnished throughout her lithological stores vast deposits of substances that in their natural state would supply a material with hydraulic properties, it was in the power of science to evolve an artificial combination of her various materials that in the highest degree would obviate the uncertainties of these single substances and secure a product at once adapted to all the purposes of the builder. It was well known that no pure limestone or simple carbonate of lime would furnish an hydraulic mortar, and in the fact that impure limestones would furnish such, though in varying degree, lay the hint that Vicat seized upon, namely, to ascertain what was the element or elements that at the same time contaminated the limestone and conferred upon it, upon proper treatment, that wonderful property of plasticity, adhesiveness and hardening under water. Analysis showed that these stones were a mixture in various proportions, of carbonate of lime, alumina, peroxide of iron, silica, etc., wherein lay the principle of hydraulicity, and hence, by an artificial combination of these ingredients, it was possible to manufacture an artificial hydraulic cement whose efficiency as a building material might be uniformly secured beyond any chances involved in the capricious accidents of geological conditions.

Vicat carried out his experiments with a triumphant verification of their prophecy; he found their results like that shown in the natural stone to be double silicate of lime and alumina, with certain traces of other substances whose presence in the composition might not be essential in its general characteristics though probably not impairing them.

I must hurry over the details of the subsequent development of Vicat's discoveries and simply mention that upon his views and experiments, several other eminent chemists and engineers in Europe entered upon similar investigations until almost the whole accessible domain of nature's rocks and earth was ransacked with the purpose of revealing other substances that might supply these invaluable qualities of adhesiveness and hydraulicity in building.

Vicat's system of manufacture of artificial hydraulic cements, or "lime," as he termed it, was soon installed, and in a short time several establishments for the purpose were set in operation. In these primary establishments they made use of quicklime and clay mixed in certain proportions with water into a paste which

was then molded into briquettes, dried, burnt in a kiln and then ground.

It will thus be seen that Vicat's method involved two separate burnings, the first for the production of the quicklime used in the composition instead of carbonate of lime or simple limestone, and the second for the briquettes formed by the combination of quicklime and clay. This system was necessarily attended with considerable expense of fuel, time and labor, but became superseded by the method carried out several years later in England by Mr. Aspdin, who, by calcining a dried mixture of chalk and the mud obtained from a river bed, and afterwards grinding the product, fabricated the now well known Portland Cement. In the meantime other English engineers occupied themselves in experiments with the same materials, but Aspdin appears to have been considered as the inventor of the article under this name, which has been introduced all over the world, and so named from the color of its mortar which resembles that of the stone found in the quarries of Portland, England.

In the interim between Vicat's discovery of natural hydraulic cement and that of the artificial product, and up to within the last few years, the natural cements, more or less, continued to be used; but in Europe especially, and in countries where European builders manage the works, Portland Cement has almost completely displaced them. In the United States, especially in the interior and where it can be cheaply produced, the natural article still holds its use, but it may readily be seen that the Portland, wherever it can be procured, and in consequence of its great superiority must everywhere command the preference of the builder.

Time will not permit me, gentlemen, to extend these remarks to a complete description of the various methods of manufacture in different countries for the production of Portland Cement. I can only mention that the two ingredients of carbonate of lime and clay being almost universally used are found in different forms in the different localities where the article is manufactured. The carbonate of lime in the condition of a very pure and soft chalk, is adopted in England where it abounds. On the continent of Europe chalk is also used where it can be obtained, but very many manufacturers there use a hard limestone either in a state of purity or otherwise. The clay, which besides the alumina, also contains the required elements of silica, iron, etc., is found in varying conditions, either as constituting the beds of salt water streams above low water level, or the soil of marshes, or as banks upon higher grounds.

In England the mixture of these two ingredients is effected by means of a heavy revolving harrow or stirrer operating in a circular tank, or wash mill as it is termed, wherein is placed the requisite quantity of water and a portion of clay as taken from its natural deposit. Into this wash mill, and after being properly pulverized and sifted, the chalk is introduced in right proportion to the clay. The charge of chalk and clay after a complete reduction of all the particles to an impalpable paste of semi-fluid consistency, is conveyed to large receptacles about 60 by 90 feet in dimensions and four feet in depth, and allowed to settle. Charge after charge of the chalk and clay mixture is thus prepared and placed in the receptacle until it is filled, the supernatant water of each layer being previously drained before a fresh one is added. The entire mass in the receptacle is left to acquire by evaporation a certain solidity, like stiff mud, in order that it may be shovelled into wheelbarrows and conveyed to the drying shed where it is spread in a layer of a certain thickness upon iron plates laid over flues, through which heat passes from fire-places, which frequently are coke ovens, and supply the coke for the final calcination in the kilns. When the mixture or raw cement is sufficiently dried, it is broken in convenient pieces as uniform as possible and charged in layers of about four inches thickness into large and lofty kilns; between each layer and below the bottom one is spread a layer of coke of about the same thickness, and when the kiln is fully charged it is fired, the calcination occupying several days. Several days are also required for the cooling of the kiln so that the burnt "clinker," as the cooked cement is called, can be handled and sorted, the properly calcined being separated from the portions that are not so. The selected clinker is then conveyed to the grinding apparatus, ground, and thus converted to powdered cement.

The process just described is termed the wet process, and I believe is exclusively used in England, and possibly to some extent on the Continent, although in the latter country, and especially where hard limestone is employed, the system called the dry process is better adapted to this sort of material. In this system the limestone by grinding is reduced to an impalpable powder, and the clay after being perfectly dried is reduced to the same condition. These two materials are then mixed in the requisite proportion of about 78 per cent. of powdered limestone, when this substance is a pure carbonate, and 22 per cent. of the dry powdered clay, these measures being by weight; they are then introduced to a pug mill with water and then incorporated into a stiff plastic paste, which as it leaves the mill is molded into square and hollow prisms or briquettes of a certain size, which after being dried are calcined, as in the wet process, and then ground.

The perfection of Portland Cement, primarily, of course, depends on the use of the proper materials and the true chemical proportions of the lime and clay in the mixture. If these conditions are not observed good cement is impossible; their intimate mixture, depending upon the fineness of the particles to which they are reduced and the trituration to which they are subjected, is also an indispensable requisite, and lastly its calcination, which must be carried far enough to produce an incipient vitrification or welding together of these ingredients. The grinding of the "clinker," as the result of the burning is termed from its resemblance to the blackish slag or cinder of an iron furnace or forge, is also important, as the degree of fineness of the ground cement affects its practical economies in several particulars, both as to strength and its capacity for sand, etc. Here, gentlemen, is a sample of Portland Cement in the condition of the clinker; you will notice its great specific gravity, scoriaceous texture and blackish color. One would hardly suppose such a substance by simple pulverization could be converted into a cement of such vast and varied utility as experience over the world for more than sixty years has proved it to be. Had the ancient Romans, Greeks, Egyptians, or any other ancient peoples, possessed such a building material, old Vitruvius would have extolled it as the acme of their engineering and architectural triumphs and challenged the efforts of posterity to produce its equal. I must, however, quit these classical contrasts and hasten with the more essential matters.

I have to speak of the operation of burning the raw cement, as involving one of the most important essentials of the integrity of the finished product. This constitutes the most expensive part of the manufacture, besides demanding the most careful attention on the part of the burner. Various forms and systems of kilns have been designed, both of the so-called perpetual and the intermittent sorts, the former being when the fresh charges of raw cement and coke are simultaneously fed to the kiln, as the thoroughly burnt portions are withdrawn, and the latter sort where the charge at once fills the kiln, and is not withdrawn until the whole of it is supposed to be completely calcined. The kilns are of numerous patterns, some of them still used are of fashions employed a century ago for burning quicklime. The so-called Hoffman kiln is an improvement on these antiquated forms, and is extensively operated for both burning bricks and Portland Cement. Into all these kilns the raw cement is charged in either lumps or in briquettes, but a late improved system of burning has been introduced into England by Mr. Ransome, wherein the dried raw cement is reduced to small particles and exposed to heat in such a manner that they are quickly converted to the clinker state, thus saving much of the time occupied by the older methods and facilitating with greater economy the operation of grinding.

Coke is the usual fuel used in burning. Ordinary coal will not answer the purpose, as the sulphur commonly contained in it would combine with the lime of the raw cement and thus tend to the production of a sulphate of lime and consequently of a cement of too rapid setting. For the production of the clinker an intense heat is necessary, which must be carefully regulated, in order that the calcination may be uniform and without overburning or underburning the material, the product in either case resulting in a failure of good cement.

Of the immense variety of purposes to which Portland Cement can be applied it seems almost unnecessary for me to refer to before an audience of architects and engineers. The wonderful characteristics of the material, its crushing and tensile resistances, its plasticity and cohesion in manipulation and adaptation to all sorts of mouldings, even to fine statuary, and its persistent but slow setting induration with its apparently eternal durability,

constitute the perfection of lithological building material both for its cementing bond, for all the various stones and bricks with which it can be used and for making blocks of stone themselves.

In this connection I must speak of the surprising discoveries of M. François Coignet, of France, and his applications of what he calls Béton Aggloméré, a calcareous composition into which besides the sand, enters Portland Cement and hydraulic lime—it is an inexpensive artificial stone and is rapidly becoming used for edificial structures of almost every kind among that scientific and enterprising people. Seventeen years ago I witnessed in that country works of a boldness of design and extent that I could not have supposed to be feasible with a simple combination of mortar and sand. I have brought with me photographic illustrations of an aqueduct of nearly forty miles in length and supplying water to Paris built with this béton, the supporting arches as well as the water pipe itself being monolithically formed with it. I had the good fortune to make the acquaintance of the engineer of this original and magnificent work, and was enabled to visit and inspect it at several points; the arch over the Orleans road, through the Forest of Fontainebleau, which I examined, was about 125 feet span without a joint in its construction. The only materials used in the construction of this aqueduct were Portland Cement in a very small proportion, hydraulic lime and the sand found along the route of the work. Another photograph shows a view of the church at Vesinet, also from foundation to the top of the surmounting cross built of the Coignet Béton. I might, if time permitted, mention other public massive works which I examined in France, all erected by the use of this material.

I have introduced these brief details of the history, manufacture and application of Portland Cement, gentlemen, supposing they might interest such of you as have not had an opportunity of an acquaintance with the subject in these particulars, and that you might find in them a recommendation for the extension of the application of this useful material in your own practice. I have felt obliged to omit many details in this part of my task which, however, you will readily find described in the literature devoted to the subject in French, English and German publications. I will now proceed to state my own experience both in the experimental manufacture and use of this valuable material.

[TO BE CONTINUED.]

A paper read by Calvin Brown, C. E., U. S. N., before the Technical Society of the Pacific Coast, at the September meeting 1890, and republished by permission from the Journal of the transactions of the Technical Society.

Swiss Log Cabin.

THE SWISS LOG-CABIN.

The illustration here presented is a sample of those log buildings to be met with in the Canton of Berne, in Switzerland, and although it differs somewhat in execution from those log-cabins of our own country, it presents, nevertheless, some points which might be made available in such construction. Many gentlemen desirous of introducing this most rustic and very picturesque style for gate lodges, gardener's house, etc., will see that, with a little care in the construction, a very desirable effect may be produced, and that with a liberal use of the saw instead of the axe, our log buildings may be made to present a much more acceptable appearance than they present throughout the country at this day.

This structure here shown is a barn, stable and cow-house, combined. It is comfortable, and very permanent. It will be observed that the logs lie close on each other, instead of leaving openings to be filled in with mud, as is the custom here. These logs are pinned down to each other with stout oak pins at regular intervals along their length, breaking joint alternately, as the layers are placed one upon another. Instead of our *shingling*, the Swiss log-builders lay the roof with boards from pole-plate to eaves, crossing them with lengths of scantling, upon which are laid rocks to secure these in their places. When the rocks are covered with moss the effect is very pretty. And indeed the rustic Swiss throughout presents points of attraction of peculiar grace.

NOTES ON THE BEHAVIOR OF STEEL RODS AT THE ELASTIC LIMIT.

BY LUTHER WAGONER.

In the transactions of the American Society of Civil Engineers, Vol. 3, is an account by Louis Nickerson of the examination of glass beams and rods under stress, by the use of polarized light. The principal fact shown in these experiments is, that the beams or rods are apparently not under uniform stress. In the case of glass rods or columns under stress, certain dark bands, normal to the direction of the force applied, were observed, whose interval of spacing varied with the load.

Mr. Nickerson's idea was that the dark bands were lines of no molecular disturbance, but no theory was presented as to their probable cause.

Having witnessed these experiments, the writer thought a possible explanation of the black bands might be due to interference of wave action; thus, if the present notion of molecular arrangement be correct (i. e., stresses are transmitted by wave action), there might exist nodal points in a rod under stress, where the stresses by interference would be neutralized, and in consequence there would be no change in the diameter. Hence, if a carefully turned and polished metal rod be pulled to a point slightly below the elastic limit, its surface should present a corrugated appearance; and if pulled to a point slightly above the elastic limit, the flow should take place between the nodes, leaving the latter unchanged in diameter.

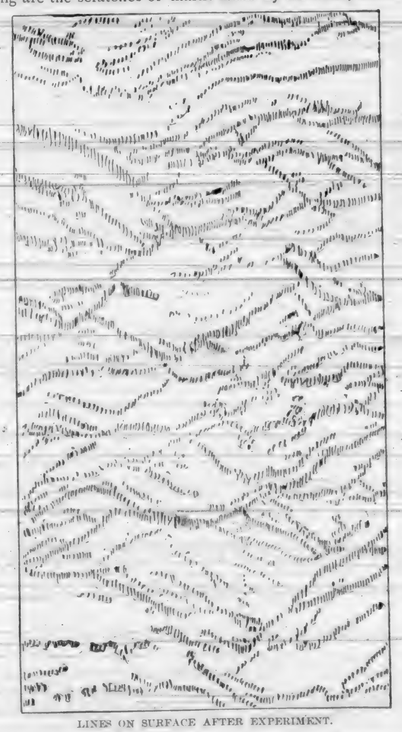
To test the matter, Lieutenant-Commander F. P. Gilmore, U. S. Navy, had prepared a number of rods of rivet steel (open hearth); the rods were twenty inches long, and turned and pol-

ished for a length of twelve inches, the diameter of the turned part ranging from five-eights to one inch.

The rods had an average breaking strength of 55,000 pounds per square inch, and the elastic limit was about 35,000 pounds per square inch. They were pulled in the testing machine at the Union Iron Works.

When nearing the elastic limit a slight difference of diameter could be felt, but this disappeared when the stress was reduced; at the moment of reaching the elastic limit the line of light reflected from the polished surface, which had been narrow and straight, suddenly became irregular and rather sinuous, the corrugations upon the surface being apparent to the touch. To develop these corrugations so that they would be visible at all points upon the surface, the rods were "honed," by carefully drawing a flat hone 1½ inches wide along the bar, thus touching all the high points and leaving the surface in a condition to be easily observed.

The accompanying engraving is an accurate development of the surface of one of the rods, for a longitudinal distance of 5.5 inches, the diameter of which was 0.93 inch; the lines in this drawing are the scratches or marks made by the hone, and also



LINES ON SURFACE AFTER EXPERIMENT.

the high or unaltered parts of the rod where there was little or no flow of metal.

Although somewhat irregular, it will be noticed that there is a general parallelism of the principal lines, and some degree of uniformity of spacing between them, perhaps as close as could be expected from an unannealed rod not perfectly homogeneous.

From the experiments made there is ground for the belief that *homogeneity of the metal will be indicated by the regularity of the lines thus obtained*, as the rods can be honed without removing from the testing machine; the method can be easily applied before testing to destruction, and in this way perhaps an additional test for QUALITY OF MATERIAL may be had.

Additional experiments upon carefully annealed bars appear desirable.

A paper read by LUTHER WAGONER, member of the Technical Society of the Pacific Coast, at the April meeting, 1890 and re-published by permission from the *Journal of the Transactions of the Tec. Society.*

ILLUSTRATIONS

The management of this journal desires to extend a cordial invitation to all architects on this coast and elsewhere to contribute designs for publication.

Drawings should be made with perfectly black lines on a smooth white surface. Good tracings, if made with black ink, answer the purpose.

The designs selected will be published without charge. All drawings, whether accepted or not, will be returned to their authors, who must bear express charges both ways.

Our double plate is a view of the New Building for the Hibernia Savings and Loan Society in course of erection on the corner of McAllister and Jones Streets in this city; built of granite, the columns are of granite, solid monoliths and fluted. Messers Pissis and Moore are the architects.

The Sea side dwelling, exterior and interior views is from designs by C. Swain, architect.

NOTES & COMMENTS.

A myrtle, even in the desert, remains a myrtle.

The cat and the rat make peace over a carcass.

Truth is heavy, therefore few care to carry it.

The soldiers fight, and the kings are heroes.

In the year 224 B. C., the colossus of Rhodes was thrown down by an earthquake.

Many a colt's skin is fastened to the saddle its mother bears.

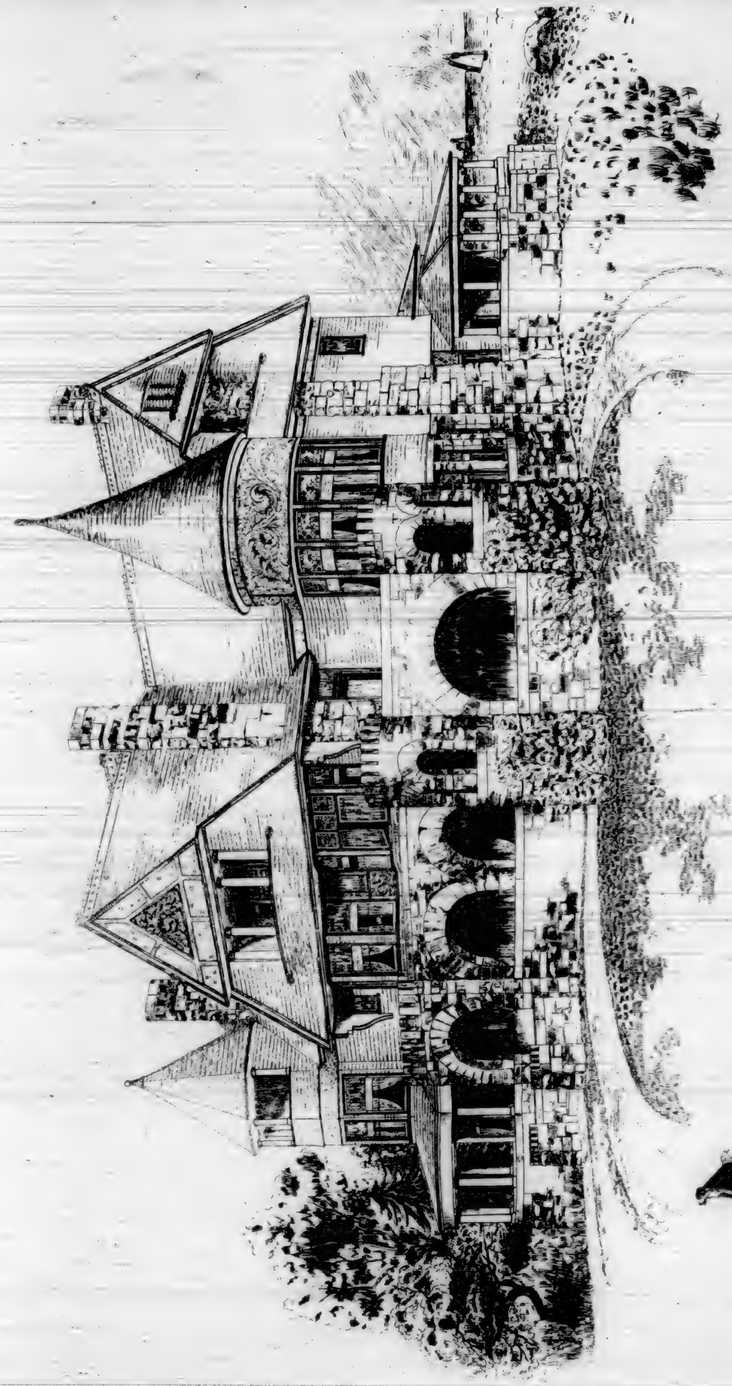
Two pieces of coin in one bag make more noise than a hundred.

A NEW IDEA.—A recent contract provides for street lighting in Paris on a novel plan. Power is distributed by the compressed air system to a great number of small motors, each of which supplies electricity for a small number of lamps.

A photographic journal of 1877 cautions the photo fraternity to beware of a "Yankee trick" that has been played upon the public in relation to photographs taken by a Mr. Muybridge, of California, of the trotting horse "Occident" in one one-thousandth part of a second, and regrets that the horse may accidentally die before these wonderful pictures are placed on exhibition. Now, any boy with a "snap box" can take these wonderful pictures.

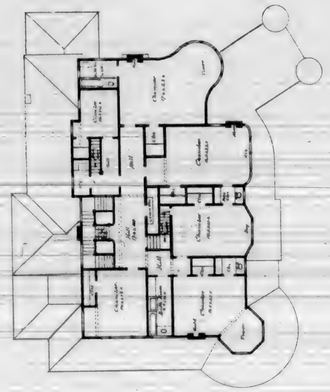
The New Building for
The Hibernia Savings and Loan Society. S.F. Cal.

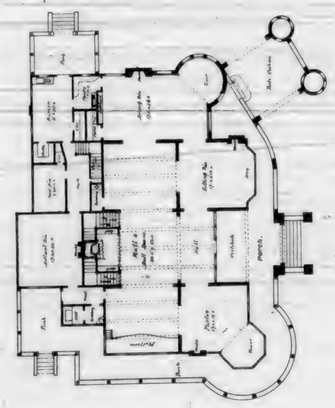
Plassis & Moore Architects.

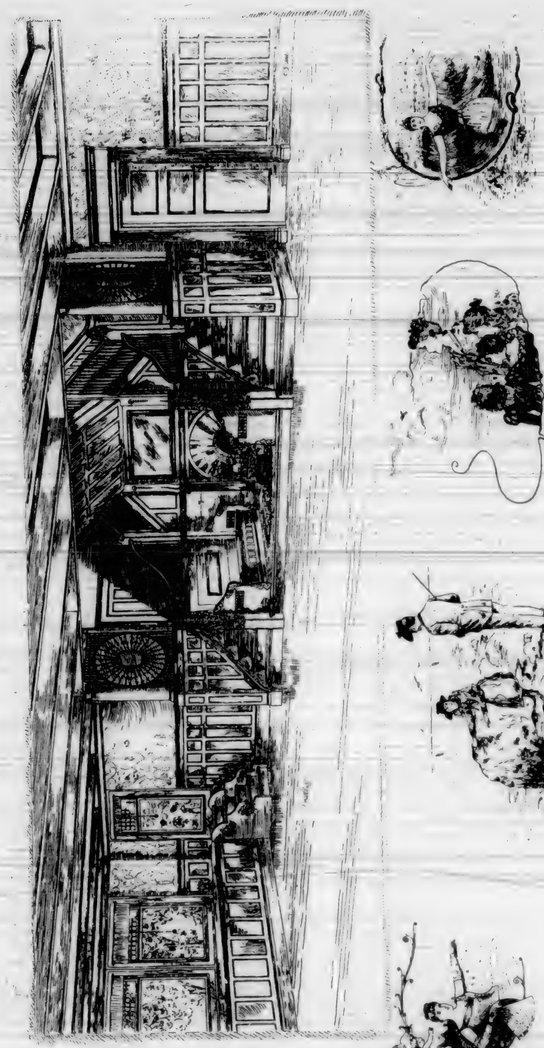


A Seaside Dwelling.
C. Swain. '91.
SAM'L. NEWSOM, ARCH'T.
318 Phelan Bldg. S.F.

APRIL 1891. THE CALIFORNIA ARCHITECT AND BUILDING NEWS. VOL. XII. NO. 4.







A SEASIDE DWELLING.
The elevations
The HALL and IDLE ROOMS.

C. Swain. '91.
with
Saml. Newsom Arch't.
318 Phelan Bldg S.F.

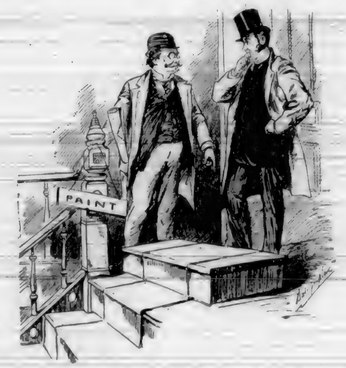
The inhabitants of Mars when looking at this earth probably think that California is the typical "Garden of Eden" they have heard so much about.

In architecture the rear column rarely becomes such a prominent feature as the rear column of the Emin relief expedition.

The camel desired horns and his ears were taken from him.

A prominent timber merchant has had his coat-of-arms painted on the panels of his carriage, with the Latin motto, "*Vidi*," which, by interpretation, is "I saw."

A young mother consults one of her friends upon the profession she ought to give her son. "The child troubles me; he is of a dreamy nature and taken with the ideal." "Make him an architect, my dear madame," replies her friend, "he will then be able to build castles in Spain."—*Ex.*



A LONG FELT FOR WANT.

MR. BILTON *(on the second story)*.—Why have you put that top step of the stairs above the level of the floor?

ARCHITECT.—I thought you wanted all modern improvements. That's the step a fellow always reaches for when he gets to the top of the stairs in the dark.—*Puck.*

First Tramp—If I had my way I'd have 365 national holidays in this year.

Second Tramp—You would, eh? And then there would be one working day in every four years. Oh, you are a nice one, you are! You would make a galley-slave of the poor laboring man, wouldn't you?

MEIGGS' WHARF.

WHAT IS LEFT OF THE OLD STRUCTURE TO BE TORN DOWN.

The old dilapidated wharf at the foot of Powell street known as Meiggs' Wharf, will soon be a thing of the past. The ravages of time have played sad havoc with the old structure, every storm that blew lately taking away pieces of it. What is left of it will be torn down in a few days to make way for the new section of the sea-wall which is advancing with rapid strides. For some years the wharf has only been used by boatmen to hang their boats on.

Meiggs' Wharf was built by Harry Meiggs, and was finished in 1852. In early days it was a great resort for young people, especially on a Sunday, one of the attractions being a menagerie kept there by "Old Warner." The first ship that ever docked there was the clipper ship Andrew Jackson in 1852. The first steamer that docked there was the California, whose advent inaugurated "steamer day." Part of the old wharf was washed away in 1860. It was repaired, and ferry-boats landed there until the year 1874.—*S. F. Call.*

AMERICAN ARTISTS HONORED.

LONDON, March 21.—The American artists in Paris have been officially invited to participate as a distinct body in the coming Berlin Art Exposition. The Americans are the only group of foreign artists who have been thus honored by the authorities at Berlin. After some consultation and deliberation the American artists in Paris, with one or two exceptions, will send specimens of their work to the Berlin exhibition It is expected there will be a total of one hundred pictures by Americans exhibited upon the occasion mentioned.—*Ex.*

PAINTING IN OIL a practical manual for the use of Students. Square 12mo. Cloth, $1.00

The thorough preparation that appears in Miss McLaughlin's writings, and her clear, direct style, have given her a place of distinction among makers of art books. In the present volume, she gives a lucid statement of the scientific theories and facts relative to colors, treating the whole subject broadly, as well as technically. This book is also largely realistic, enlarging on the material side of the subject, the tools which the student should use, and the best method of handling them.

Robert Clarke & Co., Publishers, Cincinnati, Ohio.

PROPOSALS FOR U. S. POST OFFICE AT SACRAMENTO CAL.

TREASURY DEPARTMENT.

Sealed proposals will be received at the office of the Supervising Architect, Treasury Department, Washington, D. C. until 2 o'clock P. M. on the 22nd day of May, 1891, for all the labor and materials required for the stone and brick masonry of the superstructure, the iron work of floors, ceilings and roof construction, roof covering, down and drain pipes, brick and terra cotta floor arches for the U. S. Post Office, &c., Building at Sacramento Cal., in accordance with drawings and specifications, copies of which may be had on application at this office, or the office of the Superintendent at Sacramento, California.

Each bid must be accompanied by a certified check for $500.

The department will reject all bids received after the time herein stated for opening the same; also bids which do not comply strictly with all the requirements of this invitation.

Proposals must be enclosed in envelopes, sealed and marked, "Proposals for stone and brick masonry of superstructure, iron work of floors, ceilings and roof construction, &c., for the U. S. Post Office, &c. building at Sacramento, California," and addressed to,

H. C. McLEAN,
Acting Supervising Architect.

April, 13, 1891.

OBITUARY.

THOMAS DAY.

We regret to chronicle the death of Mr. Thomas Day. Some thirty years ago Mr. Day was the proprietor of the largest and most complete plumbing establishment in this city, situated on Montgomery street near Jackson. As business extended southwardly, Mr. Day moved to Sutter street where he opened the elegant show rooms bearing his name, and filled with the most artistic and high grade articles in that line to be found in the country. With advancing years the "Thomas Day & Co." was formed, and Mr. Day withdrew from active business.

NOTICE OF MEETINGS.

San Francisco Chapter, American Institute Architects, meets second Friday of each month at Academy of Sciences Building.

Seth Babson, Pres. W. J. Cuthbertson, Vice-Pres.
Oliver Everett, Sec. John M. Curtis, Treas.

Technical Society of the Pacific Coast, meets first Friday of each month at Academy of Sciences Building.

John Richards Pres. L. Wagoner, Vice-Pres.
Otto Von Geldern, Sec. Geo. F. Schild, Treas.

California Electrical Society, meets the first and third Monday evening of each month at the Murphy Building.

W. C. Quimby, Pres. O. Brooks, Vice-Pres.
C. E. Purington, Sec. W. C. Crosett, Treas.

Builders' Association of California, meets every Monday at 330 Pine Street, Rooms 9–12, at 1.30 P. M.

S. H. Kent, Pres. A. Jackson, Sec.
L. A. Larsen, Clerk.

THE regular meeting of the San Francisco Chapter of the American Institute of Architects, was held in their former rooms at 408 California street, on the 10th inst.

The executive committee was instructed to make arrangements for rooms in the new building of the Academy of Sciences.

THE regular monthly meeting of the "Architectural Sketch Club of San Francisco," was held Tuesday evening March 31st, President Wetmore in the chair.

The election of the Executive Committee took place. The following are the names of the Executive Committee: Chairman, R. H. Wetmore; Secretary, H. J. Van Vlack; Treasurer, C. A. Meussdorffer, and C. O. Hilpisch and S. C. Benson. Mr. M. L. Rosenberg, Edw. G. Duesenberg and E. L. Holmes were elected members of the Club.

At the February meeting of the Club, the name was changed from the "A. I. A. Sketch Club of San Francisco" to "The Architectural Sketch Club of San Francisco."

A very interesting paper was read by Mr. C. A. Meussdorffer on "Architectural Sketching by Students," which excited a spirited discussion by the members present.

There are now on the roll, sixteen members in good standing, and the Club is in a very prosperous state; much good work is being done to advance the professional knowledge of its members and to promote their intercourse and good-fellowship.

THE regular meeting of the Technical Society of the Pacific Coast was held at their rooms, on the 10th inst. The subject for the evening was "Street-paving in San Francisco, its defects and methods suggested for their remedy," by Mr. S. H. Smith.

AT the regular meeting of the California Electrical Society held at their rooms on the 6th inst., the subject for the evening being "Sub-Marine Mining by Electricity," by Mr. T. J. Allen. The author gave much valuable information in regard to mines anchored in channels or entrances to harbors and which may be exploded by means of electricity. The different systems were described and their defects or advantages pointed out.

The United Brotherhood of Carpenters and Joiners of America will hold their tenth annual picnic at Shell Mound Park, on May day.

LEGAL DECISIONS.

From a large number of Legal Decisions of the higher Courts of the different States of the Union, we select and publish in this column, such as appear applicable to this section of the country

Rights of Sub-Contractors to Mechanics' Liens.—Where a contract to build houses between the owners and principal contractors stipulated that, before the last payment shall be due, the contractors shall furnish releases from all persons having a right of lien against the houses or property on which they are located for any work or materials, sub-contractors were not deprived thereby of their right to file mechanics' liens.

Murphy v. Morton, Supreme Court of Pennsylvania, 20 At. Rep., 1049, (79M).

Provision for Arbitration in Contract.—Where a building contract provides that "any question in regard to the quality or quantity of the work shall be referred to the Superintendent, whose decision shall be final," the contractor cannot recover for a disputed claim under said contract, which he has refused to submit to the Superintendent. Where no exception is taken to the reservation of a point as a question of law, objection thereto cannot be taken on appeal.

Fulton v. Peters, Supreme Court of Pennsylvania, 20 At. Rep., 936.

Validity of Ordinance Creating Fire Limits.—Where the charter of a city provides that the city "shall have power to make regulations for the prevention of accidents by fire, to establish a fire department * * * * * to prevent all possible and proper means, danger or risk of injury, or damages by fire arising from carelessness, negligence, or otherwise, * * * and such other powers and privileges not herein specially enumerated, as are incident to municipal corporations of like character and degree." The city has implied power to pass an ordinance creating fire limits, and prohibiting the erection of wooden buildings therein. An ordinance forbidding the erection of any wooden building within the fire limits as there set out, except by special permission of the council, is valid.

City of Olympia v. Mann, Supreme Court of Washington, 25 Pac. Rep., 337.

Mechanics' Liens for Machinery.—Machinery placed in a building erected for a brewery under a contract with the owner thereof, and necessary for the operation of such brewery, becomes part of the freehold, and falls within the provisions of the mechanics' lien law of New York, giving a lien for erecting, altering or repairing a building, though portions of such machinery are removable. The erection of the machinery was completed, and the engine started on or about June 13th, but the engineer of the contractors remained in charge, making alterations, etc., until June 21st, when it worked satisfactorily, and, at the engineer's request, was accepted June 23rd. A lien filed within ninety days after June 21 was a compliance with the provision of the lien law requiring liens to be filed within 90 days after the completion of the work.

Watts-Campbell Co. v. Yuengling, Court of Appeals of New York, 25 N. E. Rep., 1060.

Usage of Trade in Construing Contracts.—Usage may be used as evidence to interpret a contract, but not to vary or contradict it. Its purpose is to ascertain the intention of the parties where it cannot be ascertained by the terms of the contract. In all contracts as to the subject matter of which known usages prevail, the parties proceed on the tacit assumption of such usages, but commonly reduce into writing the particulars of their agreement, but omit to specify those known usages which are included as of course by mutual understanding. Where in a contract to ascertain the net profits of a firm, it was provided, among other things, that "from the outstanding accounts five per cent. be deducted to cover losses and bad accounts," and it was proper to prove usage of the trade to show in such cases that "outstanding accounts" meant those from which the bad accounts had been segregated and charged to profit and loss.

McCulsky v. Llostermann, Supreme Court of Oregon, 25 Pac. Rep., 366.

BUSINESS MOSAICS.

Many devices have been invented and tried to dispense with the cords and weights in windows, but none were found that would displace, successfully, the old arrangement. Within the last few years innumerable inventors have come forward, each claiming to have the long looked for device that should be practical and durable. At this time it looks as if the secret has been opened, and the problem solved in the form of the California Sash Balance as made by the California Sash Balance Co., of this City.

In this invention no weights or cords are used, but in their place is substituted a coiled spring set in the rail of the sash while in the frame is set a ratchet—and pinion with coggs. The heaviest as well as the lighest sashes are easily raised or lowered by the slightest pressure, and firmly locked, burglar proof, in any desired position by means of the ratchet. Upper or lower sashes are worked equally well. The portions exposed to view are made in any style; and form in themselves a finished appearance. The trimmings do not intefere in any manner with the curtains, blinds, shades or shutters. No boxing for weights is required, as no cords are used. The sash runs can be finished to correspond with the other finish of the apartment.

RICHARDS' TRIPLE PLUNGER PUMP, FOR ELECTRIC MOTORS, GAS ENGINES, ETC.

The first essential quality to be attained in a pump that is to be driven by electricity is freedom from intermittent strains and shocks when running at a suitable speed, so that the resistance to the motor will be constant and not cause fluctuations in the transmission of the power.

The next requisite is to reduce the friction of the moving parts to the minimum, and produce a steady flow of water, thereby lessening its frictional resistance.

The other desirable qualifications are compactness and neatness of design, and a proper arrangement of the working parts, so that they will be easy of access and require but little attention.

It has been demonstrated by experience with many pumps in actual use that the Richards pump as made by W. T. Garratt & Co., and illustrated on page iii, that they combine all of these qualifications and are endorsed in the highest terms by those who have them in use; they have three plungers so that there are three discharges of water at each revolution; the valves and water passages are large allowing a free flow of water, and the connecting rods are long in proportion to the stroke, so that the angular thrust is very little. The end of the crank shaft projects through an oil tight stuffing box and can have any kind of a pulley or gear attached to it.

The moving parts run in oil and water, and require but little attention, in fact it does not require an experienced engineer to run it, but a janitor of a building, or a person of little or no experience can give it all the attention it requires.

They run noiselessly and without jar and this of itself is a very, desirable feature, particularly in an office or appartment building

The friction of the pump is very low, and it is said by some who are using them to be only five per cent, and in one case only two per cent. This of course leaves nearly all the power expended by the motor to be used in the actual work to be performed, and makes it a very economical pump.

They can be driven by electricity. Gas Engines, water wheels or motors, wind mills or any other power that can be obtained, and are capable of performing the highest duty.

Many of them are in use in buildings, for the purpose of raising water to the tanks of roofs for elevator and other uses, and are found to be without a superior for that purpose; but they will also be found to be an efficient and economical pump for mining, irrigating or any other place where a power pump may be desired.

Whosoever seeketh wisdom shall find it by careful attention to the advertisements in the California Architect.

We have received from Messrs., Merchant & Co., the well known dealers in metal roofing plates a beautiful and artistic colored sketch showing the seven greatest engineering achievements of the present century.

Persons in search of a plumber who understands and can do a good job of plumbing, both from a workmanlike and sanitary point of view, should call on Thos. Clark & Sons. See card on page X.

THE PULLMAN SASH BALANCE IS THE BEST. IT BEATS EVERYTHING FOR OLD OR NEW WINDOWS.

What it Is.—It is a compact device for sustaining a window sash by the tension of a carefully tested coiled spring.

What it Saves.—It saves time and money, as by its use, boxes, pockets and dividing strips in frame are rendered unnecessary, and it is much more quickly and easily applied than are the clumsy weights and cords. It saves the trouble and annoyance inseparable from frayed and broken cords and noisy pulleys.

How it Works.—It is guaranteed to balance a sash more perfectly than weights or any other device. It is perfectly noiseless.

Its Durability.—Being constructed of the very best materials and thoroughly put together with the friction of a counterweight overcome, it will last a life time.

Its Adjustability.—The pressure of the tension band on the tape [regulated by the screw in the face plate] adjusts the Balance to the varying weights of sash. This renders it unnecessary to fit a sash tight or loose and prevents a sash from being pushed too violently against the top of the frame.

The Top Balance.—Shown above is for use in places where there is not sufficient room at the side. Its use in mullion windows, as shown in the cut, enables an architect to introduce light where it is the most needed, by reducing the amount of wood. See advertisement.

Hall's Safe and Lock Co., are putting in the Fire and Burglar proof safe and vault work for the new Hibernia Bank building, in course of construction on the corner of McAllister and Jones streets.

The Vulcan Iron Works are supplying the market with a superior make of stable fittings of all kinds. See advertisement on page xiv; also metal weather vanes, finials, and all manner of architectural and ornamental metal work.

The new Hibernia Bank building in course of construction, attracts attention on account of the excellent quality of the granite work. The large columns, each formed of a single piece of granite, are conspicuous features of the facade. The contractor for the granite and brick work is Mr. O. E. Brady.

Hotels that are being fitted up with heating and laundry appliances, of the most modern patterns, and where economy in fuel and attendance is desired, should communicate with Dundon's San Francisco Boiler Works.

The West Coast Wire Works, Messrs. Smith & Trowbridge, stands at the head of the list for thorough, practical work, combined with artistic excellence. Some ornamental wire work recently made by this firm, is second to none in the city, and at prices below Eastern Manufacturers.

The rose grows among thorns. (Latin, cepe sæpe sub sepe crescit.)

Composite Colors.

The effects obtained by these colors, or rather by this method of staining, are much like the effects of watered silk, looking perhaps green in some positions, and then changing into red or brown in another light.

One of the oldest of the Eastern architects declared that no advance in exterior coloring equal to the introduction of exterior staining, over a decade ago on the discovery of the Creosote stains, has been made in the last fifty years. This new discovery, made by the Creosote people, bids fair to make as great a revolution as the original one.

CITY BUILDING NEWS.

Broadway near Franklin. Mill work; owner, Mahoney Bros.; architects, Shea & Shea; contractors, City Planing Mill Co.; cost, $2,650; signed, March 19; filed, March 20; payments, 1st and 15th day of each month 75 per cent of work done; balance, 35 days.

Broadway near Franklin. Painting; owners, Mahoney Bros.; architects, Shea & Shea; contractors, Wm. Armstrong & Son; cost, $2,957; signed, March 24; filed, March 30; payments, 1st and 15th day of each month; 75 per cent as work progresses; 25 per cent, 35 days.

Bush near Jones. To build; owner, A. Mayer; contractor, L. A. Secor; surety, $750; cost, $7,500; signed, March 16; filed, March 16; payments, $1,500, 1st tier of joists on; $1,500 frame up; $1,500, brown mortared, $1,500 completed, $1,500 35 days.

California St., Nos. 2125 & 2127. Carpenter work; owner, Louis Taussig; architects, Salfield & Kohlberg; contractor, Wm. Plums; cost, $1780; signed March, 11; filed, March 13; payments, $1280, completed; $500, 35 days.

California near Buchanan. Carpenter work; owner, Clinton Jones; architect, J. H. Littlefield; contractors, Currie & Loomer; cost, $10,000; signed, March 26; filed, April 3; payments, 15th and 30th of each month, 75 per cent. of value of work done; balance, 25 days.

California near Buchanan. Plumbing; owner, Clinton Jones; architect, J. H. Littlefield; contractors, S. Ickelheimer & Bro.; cost, $1544; signed, March 26; filed, April 3; payments, on 15th and 30th day of each month, 75 per cent. of value of work done; balance, 35 days.

California near Buchanan. Masonry; owner, Clinton Jones; architect, J. H. Littlefield; contractor, Wald Tarp; cost, $-280; signed, March 26; filed, March 27; payments, 75 per cent. as work progresses, on 15th and 30th day of each month; 25 per cent. 35 days.

Castro near 16th. To build; owners, Capt. A. & O. F. Huber; architect, W. H. Lillie; contractor, Arthur C. Soule; surety, $1196; cost, $4784; signed, March 3; filed, March 18; payments, 1st and 15th day of each month, 75 per cent. as work progresses; 25 per cent, 35 days.

Capp near 23th. To build; owner, Thos. E. Kealey; contractors, Clark & Sons; cost, $3100; signed, March 6; filed, March 7; payments, $-00, frame up; $800, building enclosed; $600, brown mortared; $600, completed; $800, 35 days.

Castro near Beaver. Carpenter work, etc.; owner, Henry E. Holmes; architect, Fred. B. Wood; contractor, C. E. Dunshire; surety, $350; cost, $2200; signed, March 30; filed, March 31; payments, $350, frame up; $350, brown mortared; $350, completed; $350, 35 days.

Castro bet. 19th & 20th. Alterations; owner, Chris. Schmidt; architect, Gust. Pavel; contractor, Gust. Pavel; cost, $1066; signed, March 19; filed, March 19; payments, $401, house raised and brickwork done; $401, front up except stairs; $401, completed; $462, 35 days.

Chestnut near Dupont. To build; owner, Henry Wellman; architect, C. M. Rousseau; contractor, K. C. Gardner; surety, $9000, cost, $4775; signed, March 31; filed, April 1; payments, $1094, frame up; $1094, brown mortared; $1093, building accepted; $1094, 35 days.

Clayton near Page. To build; owner, C. E. Knickerbocker; architect, W. H. Lillie; contractor, H. Kendall; surety, $1560; cost, $2205; signed, March 24; filed, March 28; payments, 1st and 15th day of each month, 75 per cent. of value of work done; balance, 35 days.

Clay near Filmore. To build; owner, Maria Keogh; architects, Shea and Shea; contractor, Dan'l Chrisholm; sureties, Jas. McKinnon, C. G. Athearn, guarantees; cost, $6662; signed, March 4; filed, March 9; payments, $947, rough frame up; $947, brown mortared; $947, hard finished; $948, completed; 1263, 35 days.

Clay near Filmore, Brickwork etc.; owner, Maria Keogh; architects, Shea and Shea; contractor, Rhody Ringrose; cost, $880; signed, March 7; filed, March 11; payments, $322, brick foundations completed; $323, chimneys completed; $215, 35 days.

Clay near Leavenworth. Plastering; owner, Hugh Huddleston; architects, Percy & Hamilton; contractor, Chas. Dunlop; cost, $2360; signed, March 16, filed, March 23; payments, 75 per cent of value of work done; balance 35 days.

Clay near Leavenworth. Plumbing; owner, Hugh Huddleston; architects, Percy & Hamilton; contractors, Duffey Bros.; cost, $3460; signed, March 17; filed, March 23; payments, 75 per cent of value of work done; balance, 35 days.

Clay near Leavenworth. Masonry; owner, Hugh Huddleston; architects, Percy & Hamilton; contractor, David Pierce; cost, $2250; signed, March 18; filed, March 23; payments, 75 per cent of value of work done; 25 per cent, 35 days.

Clay near Leavenworth. Brickwork; owner, Hugh Huddleston; architects, Percy & Hamilton; contractor, Orrin E. White; cost, $17,935; signed, March 16; filed, March 23; payments, 75 per cent of value of work done; balance, 35 days.

Cor. Broadway and Larkin. Plumbing; owner, Golden State Land Co; architects, Geilfuss & Zimmerman; contractor, H. Williamson; cost, $2160; signed, March 13; filed, March 17; payments, 75 per cent as work progresses, 25 per cent 35 days.

Cor. Collingwood and 19th. To build; owner, F. T. Houschildt; architect; Gust. Pavel; cost, $3640; signed, March 16; filed, March 16; payments, $900, frame up; $900, brown mortared; $900 accepted; $940, 35 days.

Cor. Ellis and Powell. Steam boilers; owners, E. E. & S. V. Parsons; architect, H. Geilfuss; contractors, Union Machine Co.; cost, $3900; signed, March 2; filed, March 7; payments, 75 per cent as work progresses; 25 per cent, 35 days.

Cor. Fulton and Broderick. Brickwork etc.; owner, Henry Hilderbrandt; architects, Geilfuss & Zimmerman; contractor, Ferd Klatt; cost, $9865; signed, March 19; filed, March 20; payments, $1396, frame up; $1500, enclosed; $1500, brown mortared; $1500, completed; $2470, 35 days.

Cor. Fell & Steiner. To build; owner, Jas. Scobie; architect, Chas. I. Havens; contractor, Peter Crichton; cost, $14,195; signed, March 14; filed, March 16; payments, $3250, rough frame up; $3250, standing finish on; $3,945, completed; $3750, 35 days.

Cor. Grove & Webster. To build; owner, Jas. Lang; architect, W. H. Armitage; contractor, Jas. McConnihey; cost, $3400; signed, March 19; filed, March 24; payments, $850, rough frame up; $850, brown mortared; $850, completed; $850, 35 days.

Cor. Haight and Devisadero. To build; owner, Dr. F. W. Harris; architect, L. H. Littlefield; contractors, H. A. Johnson & Co; cost, $5900; signed, Feb. 18; filed, March 17; payments, $1800, frame up and roof on; $1500, white coat of plaster on; $1125, completed; $1475, 35 days.

Cor. Haight and Devisadero. To build; owner, Dr. F. W. Harris; architect, L. H. Littlefield; contractors, H. A. Johnson & Co; cost, $5900; signed, Feb. 18; filed, March 17; payments, $1800, frame up and roof on; $1500, white coat of plaster on; $1125, completed; $1475, 35 days.

Cor. Laussat Ave. and Steiner. Alterations, etc.; owner, Louis A. London; architect, W. Winterhalter; contractor, B. Mardin; cost, $1900; signed, March 6; filed, March 7; payments, $500, raised and framework up; $400, outside finish and 1st coat plaster on; $500, completed; $500, 35 days.

Cor. Market & 2nd. Cabinet work; owner, W. J. Sullivan; architect, Chas. I. Havens; contractors, T. W. Kreling & Son; cost, $5600; signed, March 21; filed, March 24; payments to be made on 20th day of each month; 75 per cent. as work progresses; 25 per cent. 35 days.

Cor. Market & 2nd. Plumbing; owner, W. J. Sullivan; architect, Chas. I. Havens; contractors, Duffey Bros.; cost, $1217; signed, March 9; filed, March 16; payments, $450, rough gas and water pipes in; $450, completed; $317, 35 days.

Cor. Mason & Jackson. To build; owner, L. F. Kimball; architects, Shea & Shea; contractor, L. M. Weismann; sureties, J. Doelger and J. Staude, guaranteed; cost, $6375; signed, March 4; filed, March 6; payments, $1195, frame up; $1196, brown mortared; $1195, hard finished; $1196, completed; $1594, 35 days.

Cor. Mason and Sacramento. Brickwork, etc; owner, E. A. Denicke; architect, P. R. Schmidt; contractor, R. Ringrose; cost, $1,666; signed, March 30; filed April 1; payments, 75 per cent. as work progresses; 25 per cent., 35 days.

Cor. Pine and Devisadero. Plumbing; owner, Frank Maskey; architect, Chas. I. Havens, contractor, H. Williamson; cost, $3,384; signed, March 13; filed March 16; payments, $800, rough gas and water pipes in; $800, bath tubs in; $884 completed; $900, 35 days.

Cor. Pine and Devisadero. Brickwork, etc.; owner, Frank Maskey; architect, Chas. J. Havens; contractor, Jas. McInerny; cost, $22,850; signed March 13; filed March 16; payments, $4,250, brick foundation and frame up; $4,250, brown mortared; $4,250, hard finished; $4 350, completed; $5,750,35 days.

Cor. Pine and Devisadero. Painting etc.; owner, Frank Maskey; architect, Chas. J. Havens; contractors, Swan & Stein; cost, $1,800; signed March 13; filed March 16, payments, $600, inside work 2nd coated and outside 3 coat work 2nd coated; $700, completed; $450, 35 days.

Cor. Pine and Powell. To build; owner, Thos. V. O'Brien; architect, John Gash; contractor, Ira Fancher; cost, $8550; signed, March 16; filed March 16; payments, $1000, frame and brick work done; $1000, brown mortared; $1000, white plastered, $1000 standing finish; $1000, windows hung; $1322, completed; $2228, 35 days.

Cor. Perry and 5th. Alterations; owner, Biaggeo Cirimello; architect; Angelo Banchero; contractor, G. Massoletti; cost, $3890; signed, March 7; filed, March 9; payments, $700, 1st floor joists in; $1000, brown mortared; $690, painting done inside and out; $1,000, 35 days.

Cor. 6th and Minna. Plumbing; owner, Wm. Plums; architects, H. Guilfuss; contractors, Ford Brothers; cost, $1185; signed; Feb. 25; filed, March 11; payments, 75 per cent as work progresses; 25 per cent 35 days.

Cor. Sacramento and Montgomery. Brickwork etc., owner, Pac. Mut. Life Ins. Co.; architects, Wright and Sanders; contractors, McGowan & Butler; cost, $56,000; signed, Feb. 17; filed, March 7; payments, 75 per cent as work progresses; 25 per cent; 35 days.

Cor. Turk and Hyde. Iron beams, etc.; owner, J. O. Sullivan; architect, H. Gellfuss, contractor, P. H. Jackson; cost, $1129; signed, March 10; filed, March 12; payments, 75 per cent as work progresses; 25 per cent, 35 days.

Cor. 5th and Harrison. To build. Owner, Mrs. Rose Byrne; architects, T. J. Welsh; contractors, Brennen Bros.; cost $9,090; signed, March 4; filed March 7; payments, 1st Wednesday of each month 75 per cent. as work progresses; 25 per cent. 35 days.

Cor. 7th and Mission. Brickwork, etc.; owner, T. M. McLachlan; architects, C. R. and J. M. Wilson; contractor, J. J. Conrad; cost, $16,900; signed, Jan. 12th; filed March 6; payments, $4,000, 1st floor joist on; $4,000, 3rd floor joists on; $4,000, roof on; $675, building accepted; $225, 3 days.

Cor. 16th and Valencia. Graining, etc.; owner, A. L. Campbell; architects, C. K. Kirby; contractor, Wm. Winter; cost, $1,550; signed March 4; filed, March 18; payments, $300 when primed; $400 2nd coated; $400 accepted; $450, 35 days.

Cor. 20th and Eureka. To build; owner, David Barry; architect, T. J. Welsh; contractor, P. J. Griffin; surety, $1,213.50; cost, $4,854; signed, April 1; filed April 2; payments, $1,000 frame up; $900, brown mortared; $800, white plastered; $800 accepted; $1,354, 35 days.

Devisadero near Fell. Carpenter work, etc; owner, P. Rothermel; architect, C. M. Rosseau; contractors, I. E. Kingsley, et al.; surety, $3,000 cost, $3,465; signed, March 25; filed March 27; payments, $900, building framed; $800, brown mortared; $800, accepted; $865, 35 days.

Devisadero near Sutter. To build; owner, T. Jacobs; architects, Salfield & Kohlberg; contractors, Wolton & Havard; cost, $1,666; signed March 3, filed, March 11; payments, $750 frame up; $735, enclosed and floors laid; $1,000, brown mortared; $1,000, completed; $1,165, 35 days.

Dolores near 23rd. To build; owner, H. M. Freck; architect, H. M. Freck; contractor, A. Jackson; cost, $2,860; signed, March 21; filed, March 23; payments, $700, foundations laid; $700 floors laid and brown motar on; $737.50, white plastered; $712.50, 35 days.

Eddy bet. Scott and Devisadero. Alterations; owner, J. F. McGinty; architect, C J. Devlin; contractor, John Massey; cost, $1,895; signed, March 5; filed March 11; payments, 75 per cent. as work progresses; 25 per cent., 35 days.

Eddy near Taylor. Painting; owner, J. A. Bergerot, et al.; contractor, L. Paint; surety, $500; cost, $1,250; signed March 30; filed March 30.

Eddy near Taylor. Plastering; owner, J. A. Bergerot; contractor, Chas. Dunlap surety, $4,000; cost, $4,000; signed, March 24th; filed, March 30.

Eddy near Taylor. Plumbing; owner, J. A. Bergerot; contractors, Geo. Humphreys; surety, $1,000; cost, $2,795; signed March 30th; filed March 30.

Eleventh near Mission. Carpenter work; owner, Horace B. Sperry; architect, Jas E. Wolfe; contractor, A. Jackson; cost, $5,773; signed, March 14; filed March 17 payments, $1,000, frame up; $1,200, brown mortared; $1,200, white plastered; $928, completed; $1,445, 35 days.

Eleventh st. near Mission. Concrete work; owner, Horace B. Sperry; architect, Jas' E. Wolfe; contractor, Geo. Goodman; cost, $1,866; signed March 14; filed, March 17; payments; 75 per cent. as work progresses; 25 per cent. 35 days.

Fell No. 1310. Alterations; owner, Herman Puckhaber; contractor, Jas. Geary; sureties, $1,000; cost, $2,350; signed, March 9; filed March 19; payments, $520, house raised and frame enclosed; $520 brown mortared; $522,50 completed; $787.50, 35 days.

Fourteenth near Howard. To build; owner, Mary A. Morter; architect, S. Hatfield; contractor, J. T. Moore; cost, $1,200; signed, March 9; filed March 11; payments, $300, ready for lathing; $300, outside finish on; $300, completed; $300, 35 days.

Front and Pacific. Carpenter work; owner, Jas. G. Fair; architect, H. A. Schulze; contractor, J. B. Cogswell; cost, $23,000; signed, March 23; filed, March 27; payments, 1st day of each month 75 per cent. as work progresses; 25 per cent. 35 days.

Front near Pacific. Brickwork; owner, Jas. G. Fair; architect, Henry A. Schulze; contractor, John McCarthy; cost, $28,284; signed, March 16; filed, March 16; payments, 75 per cent. as work progresses; 25 per cent., 35 days;

Front near Pacific. Iron work; owner, Jas. G. Fair; architect, Henry A. Schulze; contractors, Calvin Nutting & Son; cost, $7,900; signed March 23d; filed March 27; payments, 1st day of each month, 75 per cent. as work progresses, 25 per cent 35 days.

Fulton near Buchanan. To build; owner, Chas. Friel; architect, W. H. Armitage contractor, J. F. O'Brien; cost, $3,400; signed, March 2; filed March 24; payments $890, rough frame up; $890, brown mortared; $890, completed; $850, 35 days.

Fulton near Buchanan. Brickwork, etc.; owner, Chas. Friel; architect, Wm. H. Armitage; contractor, T. J. O'Brien; sureties: $3,000; cost, $3,400; signed March 2d; filed, March 13; payments, $850, frame up; $850, brown coat on; $850, completed; $850, 35 days.

Geary near Taylor. To build; owner, J. W. Burnham; architect, Jno. Gash; contractor, Patrick Griffin; cost, $6,497; signed, March 30; filed March 31; payments, $1,218, frame up; $1,218, rough plumbing; $1,218, outside mill work; $1,218, completed; $1,625, 35 days.

Golden Gate ave. near Laguna. To build; owner, H. Curley; architect, Wm. Curlett; contractor, P. Crichton; cost, $7,650; signed, April 2; filed, April 3; payments, $1,000, first tier post set; $1,000, frame up; $2,000 partitions set; $737.50, rough plastered $1,000, completed; balance, 35 days.

Golden Gate ave. near Market. Marble work; owner, Jos. A. Donohue; architect, A. Page Brown; contractor, Wm. Black; cost, $1,291; signed March 31; filed April 2; payments, 1st and 15th day of each month, 75 per cent. as work progresses; 25 35 days.

Harriett near Howard. Alterations; owner, Thomas Simpson; architects, Shea & Shea; contractor, Timothy Sullivan; surety, $406; cost, $1,625; signed March 16; filed, March 23, payments, $406, building raised; $406, white mortared; $406, alterations completed; $406, 35 days.

Henry near Sanchez. To build; owner, Helen Mulcahy; architect, W. W. Rednall; contractor, W. W. Rednall, surety, $650; cost, $3,420; signed, March 31, filed; March 31; payments, $855, building enclosed; $855, brown mortared; $855 completed; $855, 35 days.

Hyde near Greenwich. Mill work; owner, E. P. Gray; architects, J. J. & T. Newsom; contractors, Miller & Co.; cost, $2,125; signed, March 11; filed, March 13 payments, 75 per cent. as work progresses; 25 per cent. 36 days.

Hyde near Greenwich. Plumbing; owner, E. P. Gray; architects, J. J. & T. D. Newson; contractors, Wm. S. Snook & Son; cost, $1,544; signed, March 11; filed, March 13; payments, $600, gas pipes in; $558, completed; $386, 35 days.

Jersey near Castro. To build; owner, John Quinn; architects, Chas. Devlin; contractors, D. & R. Cullinane; surety, $1,000; cost, $1,456; signed March 10; filed, March 12; payments, $350, building enclosed; $350, first coat of plaster on; $350, completed; $375, 35 days.

Jessie bet. 10th and 11th. Carpenter work, etc.; owner, Thos. Doolan; architect, F. T. Doolan; contractor, F. S. Doolan; cost, $8,000; signed, Dec. 10th; filed, March 31; payments, 75 per cent. as work progresses; 25 per cent., 35 days.

Market st. near Golden Gate ave. Storefitting; owners, S. M. Hamburger & Co.; architect, A. Page Brown; contractor, Chas. M. Depew; cost, $2,227; signed, March 10; filed, March 11; payments, $800 half the work done in place; $600, all the work in place; $627, 35 days.

McAllister bet. Hyde and Larkin. Additions; owner, Hugh Dimond; architect, C. J. Devlin; contractor, Jno. Blake; surety, $1,350; cost, $5,578; signed, March 10; filed, March 11; payments, 75 per cent. as work progresses; 25 per cent., 35 days.

Minna near Mary. To build; owner, Mrs. M. H. Donahue; contractor, A. Lund; surety, $3,175; cost, $3,139; signed, January 6th; filed, March 31; payments, $600 frame up; $600, brown mortared; $600 interior finish on; $600, finished, accepted; $775, 35 days.

Mission near 25th st. To build; owner, Richard Collins; architects, Huerne & Everett; contractor, Gus Peterson; surety, $2,000, cost, $4,495; signed, March 13; filed, March 14; payments, $1,123.75, frame up; $1,123.75 brown mortared; $1,123.75 completed; $1,123.75, 35 days.

Nineteenth near Stevenson. To build; owner, J. H. Rosewald; architect, Julius E. Kraft; contractor, Jas. McInerny; surety, $750; cost, $2,927; signed, March 13th; filed, March 16; payments, $650, building enclosed, $650, brown mortared; $577, accepted; $750, 35 days.

Oak near Filmore. To build; owner, Mary J. Drury; architect, F. T. Doolan; contractor, Allan Mcdonald; cost, $1,650; signed, March 30; filed, April 1; payments, $760 frame up; $760, brown mortared; $760, white plastered, $760, completed; $1,010, 35 days.

Pacific ave near Franklin. Carpenter work; owner, Joseph Poheim; architect, J. Magnis; contractor, Geo. Richley; cost, $10,550; signed March 12, filed March 13; payments, $1,000 frame up; $2,000 floors laid; $1,500 porches up; $1,800 inside finish done; $1,600, finished; $2,650, 35 days.

Pacific ave. near Franklin. Concrete work; owner, Joseph Poheim; architect, J. Magnis; contractor, Geo. Goodman; cost, $2,400; signed, March 12; filed March 13; payments, $1,050, foundation laid; $750, concrete work finished; $600, 35 days.

Perry near 3d. To build; owner, Margaret Brown; contractor, M. C. Lynch; cost, $5,590; signed March 21; filed, March 25; payments, $1,000, frame up; $1,100 brown mortared; $1,000, white plastered; $1,000, completed; $1,400, 35 days.

Polk near Clay. Concrete work; owner, Marie Snell; architects, Salfield & Kohlberg; contractor, Ira Fancher; surety, $38,500; cost, $38,500; signed, March, 9; filed, March 14th; payments, 75 per cent. as work progresses semi-monthly; 25 per cent. 35 days.

Portions of blocks 167 and 196. Grading, etc.; owner, M. J. Lyon; contractor, E. F. Dennison; cost, $2,230; signed, March 30; filed, March 31; payments, $825, streets and alleys graded; $825, completed; $600, 36 days.

Second near Jessie. Woodwork; owner F. W. Kern; architects, Smith & Freeman; contractors, Riley & Loane; cost, $9,091; signed, March 23; filed, March 28; payments 1st and 15th day of each month; 75 per cent. as work progresses; 25 per cent., 35 days.

Second near Jessie. Carpenter work, etc.; owner, Allyne & White; architects, Smith & Freeman; contractor, F. W. Kern; cost, $15,340; signed, March 23; filed, March 25; payments, $3,500, second story joists on; $2,000 third story on; $2,500 tin roof on; $2,000 floors laid; $1,685, completed; $3,885, 35 days.

Sharon st. between Church and Sanches; to build; owner, Jas. Geary; contractor, Jno. Murphy; surety, $2,000; cost, $8,900; signed March 19; filed, March 23, payments, $15,000 second story joists on, $1,500 enclosed, $1,500, brown mortared; $800, white plaster on; $1,300 completed; $2,200, 35 days.

Silver bet. 2nd and 3rd. To build; owner, T. Clark; architect, T. C. Clark; contractor, G. G. Gillespie; cost, $5,475; signed, April 1; filed, April 1; payments, $1,000 frame up; $1,000, brown mortared; $1,000 white coated; $1,105, completed; $1,370, 35 days

Silver bet. 3rd and 5th. Carpenter work, etc.; owner, Thomas McNamara; architects, J. J. Clark; contractor, Allan Macdonald; cost, $8,600; signed, April 2, filed, March 31; payments, $675, frame up; $675, brown mortared; $675, white plastered; $675, completed; $900, 35 days.

Steiner near Turk. To build; owner, Adolph Lang; architects, Salfield & Kohlberg; contractor, Wm Plums; surety, $1,060; cost, $4,935; signed March 11; filed, March 12; payments, $700, first floor joists in; $700, frame up; $400, floors laid and partitions set; $800, brown mortared; $895, completed; $1,060, 35 days

Steiner near Turk. To build; owner, Louis G. Schmidt; architects, Salfield & Kohlberg; contractor, Wm. Pluns; surety, $1,000; cost, $1,980; signed, March 11; filed, March 14, payments, $700, first floor joists in; $710, frame up; $800, roof and floors laid; $800 brown mortared; $870 completed; $1,000, 36 days.

Steiner near Turk. Painting; owners, Lang & Schmidt; architects, Salfield & Kohlberg; contractors, Hoffman Bros., cost, $365; signed, March 11; filed March 14; payments, $210, first coat of paint; $210, finished; $145, 35 days.

Steiner near Turk. Plumbing; owners, Lang & Schmidt; architects, Salfield & Kohlberg; contractors, Striegel & England; cost, $780; signed, March 11; filed, March 14; payments, $330, rough work in; $250, finished; $200, 35 days.

Steiner bet. Waller and Germania. Carpenter work, etc.; owner, Henry Simpson; architect, J. R. Miller; contractor, J. F. Logan; cost, $2,9 0; signed, March 28; filed, March 30; payments, 75 per cent. as work progresses; 25 per cent., 35 days.

Sutter st. Alterations; owner, Mrs. Kate Johnson; architect, Wm. Patton; contractor, Wm. C. Pease; surety, $1,500; cost, $3,150, signed, March 18; filed, March 18; payments, 75 per cent as work progresses; 25 per cent., 35 days.

Sutter near Jones. To build; owner, E. Menesini, et al.; architects, O. R. & J. M. Wilson; contractor, J. R. Whalen; cost, $11,421; signed, March 11; filed, March 12; payments, $2,855.25, frame up; $2,855.25, brown mortared; $2,855.25, completed; $2,855.25, 35 days.

Sutter near Pierce. Brickwork; owner, Constance Roy; architect, Huerne & Everett; contractors, W. S. Nelson & Co., sureties, C. D. & Lee McGowan, $3,000; cost, $-,590; signed, March 31; filed April 3; payments, $1,382.50, ready for shingles; $1,382.50 brown mortared; $1,382.50, completed; $1,382.50, 35 days.

Sutter near Webster. Plastering; owner, J. J. O'Brien, architect; P. R. Schmidt; contractor, W. T. Houlshan & Co.; cost, $1,050; signed March 11; filed, March 13; payments, $500, brown coated; $275, completed; $2 5, 35 days.

Taylor St., No. 1,500. Additions; owner, Catherine Fahey; contractor, Jos. Pattison; cost, $3,655; signed, March 12; filed, March 14; payments, ¼ of contract price, frame up; ¼, 1st coat of plaster; ¼, ready for painting; ¼, 35 days.

Twelfth near Berenice. To build; owner, John A. Hogan; architect, Jno. T. Hogan, contractor, Henry W. Wilden; surety, $1,500; cost, $3,390; filed March 23d; signed, March 27; payments, $634, enclosed; $636, brown mortared; $636, plastering completed; $636, completed; $848, 35 days.

Twenty-fourth near Noe. To build; owner, Wm. Nichol; contractor, J. L. Mc Laughlin; cost, $1,765; signed, March 18; filed, March 19; payments, $400, brick work done; $400, partitions set and building enclosed; $200, brown mortared; $323.75, completed; $441.25, 35 days.

Valley near Church. To build; owner, August Kroeger; architect, W. H. Mead, contractor, W. H. Mead; cost, $1,400; signed, March 10; filed March 7; payments, $800, frame up. $500; brown mortar on; $900, completed; $500, 35 days.

Valencia near 16th. Alterations; owner, Otto Quellmatz; architects, Wm. Schrof; contractor, Henry Weiss; cost, $6,875; signed, March 14; filed, March 16; payments, $1,280, frame up; $1,280, roof of both buildings on; $1,280, white coat of plaster on; $1,280, all exterior and interior finish on; $1,755, 35 days.

Valencia and Mission. To build; owner, H. F. Michaelis; architects, Martens & Coffey; contractors, M. Loftus; cost, $6,150; signed, March 19; filed, March 31; payments, $1,000 frame up and roof boards on; $1,000, ready for plaster; $1,500, hard finished; $1,310, completed; $1,540, 35 days.

Vallejo near Powell. Additions; owner, M. B. Thompson; architects, Wm. H. Wharf; contractor, A. Christensen; sureties, H. Levi, D. H. Bibby; cost, $1,425; signed, March 24; filed, March 22; payments, $966, underpinned; $260, ready for mill work; $300; ready for painter; $995; completed; $360, 35 days.

Washington near Octavia. To build; owner, C. E. Whiting; architect, W. J. Mathews; contractors, Smilie Bros.; cost, $9,745; signed, March 23; filed, March 31; payments, $7,305, work completed; $2,440, 35 days.

Washington st., No. 1,812. Alterations; owner, Wm. Boericke; architects, Polk & Gamble; contractor, J. R. Whalen; cost, $3,150; signed, March 16; filed March 11; payments, $800, brick work, completed; $1,000 enclosed; $1,000, plastering finished; $1,350 completed; $1,300, 35 days.

Waller near Broderick, Carpenter work; owner, John Thode; architects, Martens & Coffey; contractors, Droge & Munster; cost, $6,360; signed, March 13; filed, March 19; payments, $1,400, frame up; $1,200, floors laid and partitions set; $1,000, white mortared; $1,160 completed; $1,600, 35 days.

Waller near Broderick. Brickwork, etc.; owner, John Thode; architects, Martens & Coffey; contractor, Martin, Fennell & Son; cost, $650; signed, March, 13; filed, March 19; payments, $280, foundation walls finished; $200, chimneys finished; $170, 35 days.

York bet. 22rd and 24th. To build; owner, Bessy McDonougnet et al.; architect, Geo. Houston; cost, $2,701; signed, March 25; filed, March 26; payments, $675, roof shingled; $675, brown mortared; $675, white mortared; $676, 35 days.

Alameda County.

Adeline near 32d, Oakland; 1-story and basement; owner, Winnie Calahan; architect, E. A. Van; contractors, E. F. & A. F. Ware; cost, $1,254; signed, March 4; filed, March 11; payments, $400, frame up and roof on; $400, plastering done; $454, 35 days.

Alameda ave. near Grus st., Alameda. 2-story house; owner, Henry Mohns; architects, Cary & Johnson; contractors, Marcuse & Remmel; cost, $1,475; signed, March 25; filed, March 26; payments, $368.75, frame up and roof on; $368.75 brown mortared; $368.75, completed; $368.75, 35 days.

Alameda near Walnut ave, Alameda, two 2-story houses; owner, Henry Mohns; architects, Cary & Johnson; contractors, Marcuse & Remmel; cost, $2,950; signed, March 28; filed, March 27; payments, $737.50, frames up and roofs on; $737.50 brown mortared, $737.50, completed; $737.50, 35 days.

Bay st. near central ave., Alameda. 3 two-story dwelling houses; owner, Henry Mohns; architects, Marcuse & Remmel; contractors, Marcuse & Remmel; cost, $3,000; signed March 7; filed; March 9; payments, $1,000, frames up and roofs on; $1,000; signed March 7; filed; March 9; payments, $1,000, frames up and roofs on; $1,000, each white plastered; $1,000 each building completed. $1,000, 35 days.

Benton st., near Central ave. Alameda. 2-story dwelling; owner, Henry Mohns; architect, A. Steinbiht; contractors, J. R. & S. P. Richart; cost, $2,100; signed, March 2; filed, March 5; payments, $400, frame up and roof on; $800, brown coated; $675, completed; $925; 35 days.

Central ave., near 3d., Alameda. 1-story frame; owner, P. Winter; architect. A. R. Denke; contractor, A. R. Denke; cost, $1,575; signed, March 4. filed, March 9; payments, $560, shingled; $500, completed; $575, 35 days.

Cowland Tract, Oakland. 1-story frame; owner, D W. Pratt; architect, Chas. Mau; contractor, J. B. Spragues cost, $1,762; signed, March 7; filed, March 9; payments, $246.50, brick work done, frame up; $325, roof on and first coat plaster; $325, second coat plaster; $325, completed; $440.50, 35 days.

Curtis st., near Lydia, Oakland. Cottage; owner; Edward Dolan; contractors, McKay & Hill; cost, $1,685; signed, March 26; filed, March 28; payments, $400, chimney built, rustic and shingles on; $400, first coat mortar on; $400, completed; $435, 35 days.

Cor. 20th st. 23d ave., East Oakland. 1-story frame; owner, Mrs. A. C. Whitt; architect, Chas. Mau; contractor, P. F. Nelson; cost, $2,335; signed, March 24; filed, March 24; payments, $435.25, frame up; $438, ready for 1st coat plaster; $488, outside finish completed; $437, building completed; $583.75, 35 days.

Daleys Scenic Park, Berkeley. 1-story frame; owner, Earl H. Webb; architect, B. Summers; contractor, B. Summers; cost, $1,463; signed, March 9; filed, March 12; payments, 450, house enclosed; $400 brown mortared; $215, windows in; $398, 35 days.

Eighteenth st. near Encinal ave., Alameda. 2-story dwelling; owner, Wm. Wilson; architects, Judd, Hamly & Co.; contractor, Geo. A. Benesman: cost, $3,675; signed March 6; filed March 9; payments, $918.75; frame up and roof sheathed; $918.75, enclosed and ready for plastering; $918.75, woodwork done, 1st coat paint; $918.75, 36 days.

Fifteenth st., bet. 3d & 4th aves., East Oakland. Owner, T. P. Schaller; architect, A. Ruch; contractors, Pierce & Ruch; cost, $5,400; signed, Feb. 25, filed, March 6; payments, $1,350, frame up; $1,3 0, enclosed, rough plaster on; $1,350 completed: $1,350, 35 days.

Encinal ave, near Paru st., Alameda. 2-story dwelling; owner, Henry Mohns; architect, A. Steinbiht; contractor, H. M. Finley; cost, $2,220; signed March 13; filed arch 17; payments, $400, frame up; $550, brown coated; $715, completed; $555, 35 days.

Fifty Associates Track, East Oakland. Dwelling house; owner, Lester W. Forsting; architect, John Hodge; contractor, Herman S. Kribbs; cost, $2,422; signed, March 10; filed, March 13; payments, $606.25, frame up and rustic on; $606.25, 1st coat brown mortar; $606.25, completed; $606.25, 35 days.

Gaskill Tract, Oakland. 2 buildings; owner, Henry Mohns; architects, Cary & Johnson; contractors, Marcuse & Remmel; cost, $1,775; signed, March 23d, filed, March 27; payments, $443.75, frames up and roofs on; $443.75, brown mortared; $443.75, completed; $443.75, 35 days.

Klinkner ave., Herzog st., Golden Gate. 2-story frame; owner, C. A. Klinkner; architects, J. J. & Thos. D. Newsom; contractor, Thos. Bassett; cost, $2,025; signed, March 9; filed, March 10; payments, $500; rough frame and rustic on; $500, rough coat plaster; $500, completed; $525, 35 days.

La Margareta Ranch, Livermore. 2-story dwelling; owner, A. B. Henderson; architect, A. B. Henderson; contractor, J. F. Meyers; cost, $3,050; signed, March 7; filed, March 9; payments, $500, frame up and roof sheathed; $700, enclosed and brown mortared; $500, plastering completed; $600, work done; $750, 36 days;

Lot 15, block 132, Oakland City. 2-story flat; owner; Mary Stanton; architect, C. F. Weldon; contractor, C. F. Weldon; cost, $2,175; signed, March 28; filed, March 28; payments, $350, studding up and rustic on; $450, brown mortared; $600, completed; $775, 35 days.

Myrtle st. near 21st, Oakland. 1-story cottage; owner, Catherine Richter; architect, A. W. Smith; contractor, Thos. McGanly; cost, $2,800; signed, March 10; filed, March 11; payments, ¼ frame up and brickwork done; ¼ framed and brown mortared; ¼, completed; balance 30 days.

San Antonio ave. bet. 21st and 22d st., Alameda. Cottage and basement; owner, Francis Lawrence; architect, J. H. Young; contractor, J. H. Young; cost, $1,210; signed, March 5; filed, March 9; payments, $400, frame up and roof on; $400, plaster on and windows in; $410, 35 days.

Strawberry Ck. and Shattuck ave., Alameda. 2-story frame; owner, F. K. Shattuck; architect, W. H. Weilbye; contractor, W. H. Weilbye; cost, $7,700; signed, March 9; filed, March 11; payments, $1,925, frame up and roof on; $1,925, 1st coat paint on; $1,925, plastering completed; $1,925, 35 days.

Tenth ave; near 17th st., East Oakland. 2-story dwelling; owner, H. H. Nagle; architect, Geo. A. Bordwell; contractor, D. S. Brehant; cost, $2,810; signed, March 12; filed, March 19; payments, $700, frame up; $707, plastering done; $700 completed; $703, 35 days.

Thirty-first near Market st., Oakland. 1-story frame and basement; owner, Wm. H. McDonald; architects, C. R. & J. M. Wilson; contractors, Ingerson & Gore; cost, $2,180; signed, March 19; filed, March 20; payments, $545, rough frame up; $545, brown mortared; $545, completed; $545, 35 days.

Twenty-first near Telegraph ave., Oakland. 2-story frame; owner, Susan C. Bruce; architect, Chas. Mau; contractor, Jas. Toohig; cost, $4,443; signed, March 24; filed, March 25; payments, $833, frame up; $833, ready for 1st coat of plaster; $833, 2d coat of plaster on; $833, completed; $1,111, 35 days.

Sonoma. Cottage for C. Aguilon; cost, $2,500; architects, Mooser & Cuthbertson.

The California Architect and Building News.

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OFFICE, 408 CALIFORNIA STREET, SAN FRANCISCO, CAL., U. S. A.

VOLUME XII. MAY 20th, 1891. NUMBER 5.

A MONTHLY JOURNAL DEVOTED TO THE ARCHITECTURAL INTERESTS OF THE PACIFIC COAST.

Published on or about the 20th of each month by The California Architectural Publishing Company. The Stockholders being Architects and others interested in the profession.

SUBSCRIPTION TO THE JOURNAL, - - $3.00 PER YEAR IN ADVANCE.

ADVERTISING RATES:

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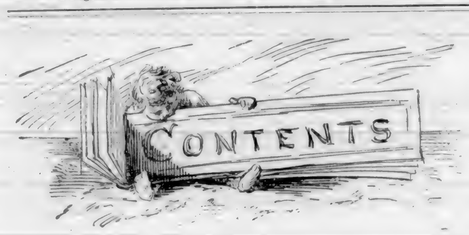

WITH this May number of the CALIFORNIA ARCHITECT, we commence a series of illustrations and descriptions of the early architecture of this coast, by our special correspondents "Tres." The subject for this issue is the Old Church of the Mission Dolores, at San Francisco. These ancient structures mark the progress of civilization in the earlier periods. It is the intention to continue these representations of the ancient architecture as furnished by our correspondents, as they may journey through California and Mexico.

FROM time to time for a number of years we have been admonished that the old and well tried "Iron" was to be superceeded by the new and untried "Aluminum" but the practical benefits have not been at the present time, so far realized as to replace the other metals. Within a short time experiments have demonstrated that Aluminum when combined with certain other metels forms an alloy which can be rolled into sheets which for lightness, ductility, and durability renders it invaluable for roofing on any place where sheet metal is used. An alloy called Stan-Alumin when rolled into sheets is readily bent and worked into any form; it will not corrode, therefore does not require painting as a protection from the elements.

This material from its durable and other superior qualities is destined in the near future to adapt itself to the requirements of the building trades.

The Master Painters and their employees are endeavoring to effect a more general recognition by the public, of the value of good work and materials, and awaken them to the fact that to obtain the best work, honest and competent men must be employed.

The evil of adulterated and worthless mixtures that are very often palmed off on the ignorant or unsuspicious public, does exist, and in the present effort of the Painters to obtain the aid and assistance of the Architects in securing a high standard of work and material, is worthy of the best help of the Architecural Profession and the public they serve.

An honest painter, using pure stock and not trying to rob his employer by substituting worthless compounds, technically termed *dope*, cannot compete with a dishonest man, and the property owners will find it to their advantage in the end, to support the best class of mechanics, as it is true of this as of almost everything, that *the best is the cheapest*.

We believe the Master Painters and their employees have taken a stand in the right direction. Anything that tends toward a higher standard of excellence for any class of work, must of necessity be of general good to the community.

The Painters should, and probably will be supported by all right thinking men.