of the year that hardly one-half of the time could be utilized for building operations, the above synopsis is very favorable, and is a criterion to judge of the future.

THE BRICK DEMAND.

From present indications, the coming season will be one of unusual activity in the erection of brick buildings. There is a superabundance of capital in search of profitable investments, and since the rush for railroading, mining, and stock operations has, in a great measure subsided, this by no means new field, that of building, affords the greatest attraction, holding out, as it does, the assurance of a fair return on the investment, and almost absolute security. The substantial appearance and increased security against fire, of brick compared to wooden structures, will tend to increase the demand for brick and other clay products that enter into their construction. Terra cotta is coming into a more extended use, and as it is claimed for it, absolutely fire proof and indestructible by time and weather, we apprehend it will not be long before all the ornaments and trimmings on the outside of brick buildings will be made of that material.

Our brick manufacturers are even at the present time very busy, and many have their whole year's product already engaged. Pressed bricks from San Jose are now coming into prominence. We would suggest to the manufacturer, that it should be his endeavor to manufacture his brick as nearly as possible of the size of the rough brick generally used in buildings, on account of keeping the courses as nearly even as possible, where pressed brick are used on the face of a building and rough brick for backing.

BUILDING ACTIVITY GENERAL.

From every portion of the State we hear of increased activity in building circles. The immense amount of money necessary to repair damages to the bridges, railroads, etc., in the southern part of our State, will cause great activities in the localities affected.

In this city, a review of last year's summary will show that an unusual large number of small buildings was erected by the laboring class of our population, and with the bright prospects now appearing, we think the number will be largely augmented this year.

AN imitation of and substitute for mahogany, useful in fine manufactures, is due to French ingenuity. The first operation is to plane the surface of any species of close-grained wood until it is perfectly smooth, and it is then rubbed with diluted nitrous acid, which prepares it for the materials subsequently to be applied. These consist of one and a half ounces of dragon's blood, dissolved in a pint of spirits of wine, and one-third of that quantity of carbonate of soda, mixed together and filtered, the liquid in this state being rubbed, or rather laid upon the wood with a soft brush. This process is repeated with very little alteration, and, in a short interval, the wood possesses all the appearance of mahogany.

San Francisco Chapter American Institute of Architects.

THE regular monthly meeting was held in the rooms of the Art Association, on Friday evening, March 7th. President John Wright in the Chair.

The minutes of the preceding meeting were corrected so that the report of the committee appointed to wait upon the Pioneers should read as follows:—

The Pioneers were willing, through their committee, to adopt the suggestions advanced by the Architects, with the exception of the one relating to the value of the premiums. This they had no right to alter.

A committee—Messrs. Wilson, Gray, and Kean—from the Master Plumbers' Association, being in waiting, they were accorded a hearing. The Chairman of the Committee, Wilson, asked the Chapter to consider the following propositions: That all members of the Chapter be requested to include all sewer work—iron-stone pipe included—in the plumbers' specifications. It was claimed that defective sewer work very frequently occurs in sewerages, producing offensive results, for which plumbers receive censurse; and that in some cases it has become necessary for plumbers to tear out the whole of the work done to obtain proper drainage, all of which, it was claimed, might be avoided, if the whole of the pipe work of buildings, sewers included, was placed in the hands of the plumber, who would then become the responsible party for the sanitary conditions of buildings. The committee also urged that the segregation of the plumbing work, and its letting by separate contract be made the rule.

The committee then withdrew, and the regular order of business was proceeded with.

The committee appointed to secure a seal for the Chapter reported that it would be done in a few days. Extra time had been taken in order to present a seal that would have artistic merit in its design.

Committee in regard to competition, and the rules governing the same, requested further time.

L. Stone was elected a student member. Propositions received from C. I. Havens as a fellow, and L. M. Turten as a student member. Referred to Messrs. Curlett, Pissis, and Henriksen.

A motion was made that a committee be appointed to prepare a blank indenture and articles of agreement between architects and pupils, and their parents or guardians, so that all architects could use the same form in regard to articled students. The said form to contain specifically the rates paid to the students during their apprenticeship.

The motion was unanimously adopted, and Messrs. Curlett, Sanders, and Pissis appointed as such committee.

Resignation of Joseph Gosling received and accepted.

The subject introduced by the Master Plumbers' committee was then taken up, and received a thorough and general discussion from all the members present.

It was not deemed advisable that plumbers should undertake to do work properly belonging to the mason. Cement or iron-stone pipes had to be laid by one familiar with the use of the trowel. In many cases a brick sewer was laid from the main to the edge of the sidewalk, and, in this case, it would be taking from one trade in order to swell the amount of contract of another.

The report of the Plumbers' committee was also deemed a reflection upon the architect. The latter always required a sewer to be left open until inspected, and the plumbers, by claiming that sewer pipes were not graded to correspond with their work, deflection of pipes being such that joints were sometimes broken, ends of the pipes not filled properly with cement, thereby causing in a short time offensive smells to permeate through the ground, etc, etc., placed themselves in a position as a superior in judgment to those whose duty it was to superintend every portion of the building.

It was the sense of the Chapter that the sewer work rightfully belonged TO, and should be done BY the mason.

A motion was made and unanimously carried, that hereafter all trade organizations or associations desiring to make any complaints or state any grievances, must do so in writing, the same to be handed to the Secretary before the regular meeting of the Chapter.

A short discussion then ensued upon some of the provisions of the fire ordinance. No action taken in regard thereto.

Motion made and carried that hereafter all members who are in arrears one year's dues, after receiving notice from the Secretary to pay the same, and failing to do so, shall have their names stricken from the roll until all such arrearages are paid.

Adjourned.

The office of the Secretary of the Chapter is located at 240 Montgomery St., Room 11, San Francisco.

Master Masons.

SINCE their organization upon the basis of being entitled to *original contracts with owners* in all sums exceeding $300, they have managed their interests intelligently, standing by the rule adopted, and the rule working no hardship. In our own case we have managed in this way: When the amount of mason's work has exceeded the limit in the erection of frame buildings, where the mason work has been scarcely sufficient to justify segregation, viz., to have the carpenter draw an order upon the owner for the sum of mason's estimate, say $325 or any other amount, made payable out of the respective payments as written in the carpenter's contracts, and the owner upon this order entering into a separate agreement to pay the mason, all of which can be accomplished with but little tax upon the time of any *good natured* architect or any one else.

We certainly favor the position assumed by the master masons, for the reason that if the combining of all branches in one contract is an advantage to *one man or firm*, the contractor, that advantage is secured at some sacrifice to sub-contractors' interests, who are under such circumstances placed at the greater disadvantage of more unequal competition and sometimes questionable manipulators, in the handling of bids, while bidding in the usual way, as first contractors, offers greater security as to fairness and equality of competition, as it but seldom happens that either owners or architects seek or permit bids from, or are willing to let work to doubtful parties, and it is a matter of no little interest and importance to architects to have all work fall into the hands of competent men.

Besides all these considerations, the effect of raising the mason's trade from sub to original contractors, will be decidedly good and manifest upon the masons as a class, as it will remove every feeling of subserviency and awaken and inspire the better and more manly feelings. The fact needs no argument in support; men as a rule are influenced in every way by the circumstances surrounding them. However great and good, however intelligent and masterly a man may be, these qualifications and attainments may be improved and enlarged by surrounding conditions and influences. And so in mechanical life. All that tend to lift up and develop the better qualities are the points to be desired.

Shyster Architects.

WE know of no more appropriate term to apply to that class of individuals who infest, and by their dishonorable and unprincipled acts disgrace the Architectural Profession, than that of shyster as defined by Webster's unabridged.

A CASE IN POINT.—A firm of architects in this city was introduced to an owner who contemplated the erection of a building to cost about or rising $4,000. Satisfactory arrangements were at once made, and the order given to prepare the preliminary sketches, the purchase of one of two lots in view depending upon suitableness of plans to lot. Consequently accurate plans in full were prepared, and the lot purchased accordingly. After the purchase, information of the fact was communicated to a firm of two, who reached this terrestrial state of existence through the same parental channels, by a member of the real estate firm selling the lot. As in all such cases the soliciting member at his earliest convenience hastened in search of the purchaser, and by his usual misstatements of "we can build houses cheaper than anybody else, especially architect number one," and his misrepresentations of others, endeavored to secure an engagement, after being told by the purchaser that architect one had been engaged. Several other turns were afterwards made to humbug the owner of the lot, and take the job away from the parties whose plans had been accepted and approved before the **MIS-delineator of Eastlake** knew that the owners in question lived. But to "make a long story short," we give the final, the more disgraceful and morally and professionally dishonest part of the transaction.

The plans adopted were estimated upon, and, the result exceeding the limits, the specifications were modified, and the price reduced by a second competition of eight competent contractors to $4,434, which proved acceptable to the owners; but a delay in commencing construction occurred by reason of title searching and money matters. It seems to have occurred to the marauders upon other people's rights, that the opportunity was open for another "dirty piece of work," and so the owner was again sought, and the *lie* repeated that "we can build you a house cheaper than number one," while in fact their knowledge of the building science and of proper construction, if no better was possessed by, would reflect no credit upon the intelligence and mechanical smartness of any apprentice boy of three years' service at building trade. And further said he to the owner—the words may differ but the sense is *exactly* the same—"We are going into the business and need the influence of your building. Mr. ——, number one, is about the oldest architect in the city and don't need your work. If, therefore, you will dismiss number one and pay them $90.00, we will build your house at a cost of $3,800, and charge you but 2½ per cent., out of which we will return or pay the $90.00." The quick discernment of the owner in a moment detected the concealed roguery that was intended, and repudiated the proposition. That rascality was intended is beyond question, for with $3,800 as the cost, 2½ per cent. would return in percentage just $95.00, from which deduct the $90.00 to be paid to number one, and the grand balance of $5.00 for plans, the specifications, superintendence, and commissions to real estate agent would remain. It is unnecessary to add more, as the unmentioned facts are so clearly transparent that any intelligent owner must readily comprehend them. That there are possibilities of improvement in the practice as architects, is altogether likely, but we question whether the science will ever reach a level at which $5.00 will be considered a fair compensation for architectural services and outside commissions on buildings costing $3,800, with the slightest tincture of professional integrity and honesty attached. What we have said is from personal knowledge, being one of the interested parties.

Bancroft's Histories.

ELEVEN volumes of this work have been completed. Interest grows with each succeeding issue, as the times and incidents approach within the memory of many now living. No student can afford to be without this set of works. It will comprise thirty-nine volumes. Prices can be obtained at the office of this journal.

Separate Contracts.

THE plumbers appeared by committee before the Chapter of Architects at its last session, asking among other things that the segregation of the plumbing work of buildings be made the rule. This request should have been qualified by saying that several of the architects in San Francisco have for years pursued just that course, and credit should have been given to those who have for so long a time practised the segregation plan.

As interest dictates, arguments run pro and con among original and sub contractors; so that architects and owners must judge and act for themselves. It would involve great trouble and distraction if *all* the branches were to set up the same claim, and refuse to submit to sub contracts.

The principal contract should carry all except the more prominent branches, if not all. The plumbing and painting may consistently be segregated in moderate cost houses, and in better residences the plastering also may be separated. In brick buildings three separate contracts are feasible, to wit, mason, carrying the grading, sewerages, etc., the iron-worker, and carpenter, the latter comprehending all not included in the mason's and iron-worker's branches. The plastering and cement work also is frequently of such magnitude as to justify segregation. But in all such matters if each architect and owner will act just as he sees fit, and let matters be arranged as they may, there will always be found those who will be willing to accept sub contracts, situations and conditions.

Obscuring Glass.

THERE are many ways of accomplishing this, some of the plans making the glass permanently frosted, others only temporarily so. For permanence, take a flat piece of marble, dip it into glass-cutters' sharp sand, moistened with water; rub over the glass, dipping frequently in sand and water. If the frosting is required very fine, finish off with emery and water. As a temporary frosting for windows, mix together a strong, *hot* solution of Epsom salts and a clear solution of gum arabic; apply warm. Or use a strong solution of sulphate of soda, warm; and when cool, wash with gum water. Or dab the glass with a lump of glaziers' putty, carefully and uniformly, until the surface is equally covered. This is an excellent imitation of ground glass, and is not disturbed by rain or damp.

Sensible Building.

THE Egyptians of to-day commence the building of a house by tracing an outline plan on the ground with plaster, and a very sensible way it is, too. No danger that the front steps will over-reach on the sidewalk, nor the rain from the roof slop over upon the neighbors, because the plan is too big for the lot.

Science of Carpentry, $5.00.

New York Notes.

BY A. CURTIS BOND.

I CANNOT refrain opening my letter this month with a reference to the intolerable weather we have had to endure for the past four weeks. It has indeed been unprecedented in New York experience, and singularly enough, instead of wasting its strength as the weeks have gone past, the storm has positively seemed to increase in violence and wickedness, until to-night its fury appears to be fully developed into a tornado of the most cyclonic proportions and of sufficient force to blow down a row of three unfinished houses in the upper part of the city. Whether the comparative ease with which these buildings were destroyed, or rather thrown to the ground, reflects upon the character of modern building, I will not undertake to say, but it is merely a repetition of what has occurred heretofore in some of our principal streets. Not long ago four dwellings, quite pretentious in their size and appearance, and completed above the third floor, succumbed to a "Nor'easter," and were scattered pretty well over the best part of a block.

Naturally, during this stormy spell, outside work upon all sorts of edifices has been at a standstill, and no practical advance has been made in any of the many buildings which are about beginning, or are just beyond the beginning stages.

Since I last referred to our city architecture there has been very much going on in the way of building, and some of the most prominent houses have been put up. Mr. Charles L. Tiffany, the head of the well-known jewelry firm, has a magnificent and most extensive affair at Seventy-second Street and Madison Avenue. It is evidently in the Venetian style, being perfectly plain and extremely massive. A dark slate-colored stone forms the lower part of the building, and extends up to the third story, beyond which brick is used. In the place of a front stoop, an arched passage or gateway admits one to an open interior court, from which rise stairs to the different flats. The object of the enormous structure is to contain or provide accommodations for the entire Tiffany family, and it looks large enough to do it.

H. G. Marquand, who is known in New York as a director in almost every one of the large corporations, railroads, etc., that center at this place, has just completed a marvelous structure of stone at Sixty-eighth Street and Madison Avenue, and, it is said, is having it decorated at an expenditure of over $100,000.

Mr. Villard had not quite finished his houses when his failure occurred. They are gorgeous buildings, three in number, occupying an entire block, and combining all sorts of accessories, such as a swimming bath, concert room, and a variety of other unusual features.

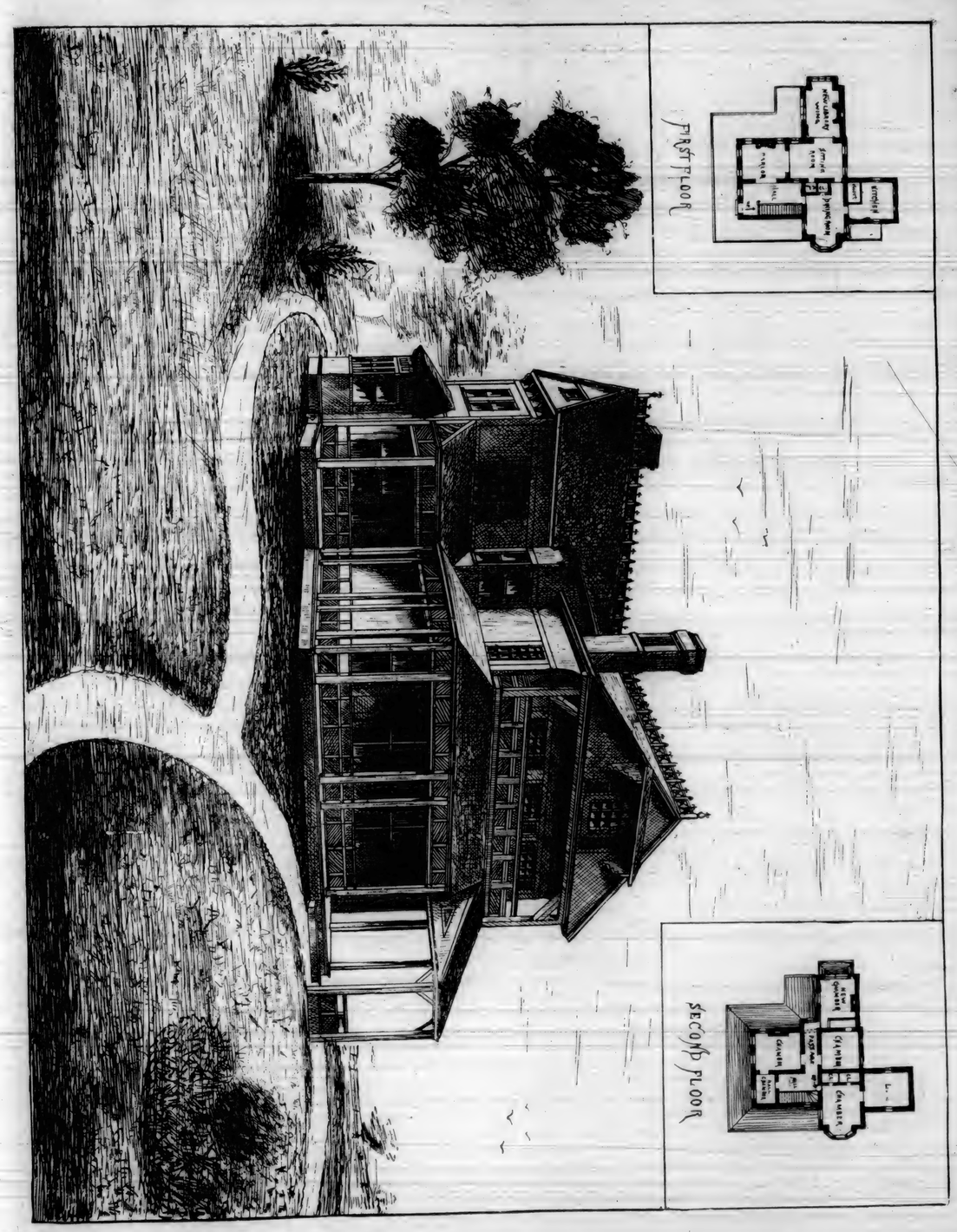
There is a house built some years ago, and still a sight among our local curiosities, known as the Ward House, standing on Forty-seventh Street, a few feet from Fifth Avenue, the fashionable quarter of the metropolis. It is a low and long building somewhat after the principle of the English country halls or palaces, has a very extensive park around it (ground worth $10,000 to $30,000 per lot of 25x100 feet), with trees and fountains, and within the walls of the building itself is a theater, a swimming bath, a raquet court, and a multitude of other "queer" things.

There has been much attention given the subject of the protection of buildings from lightning. The approach of the season when the danger from this form of accident is the most threatening, has no doubt brought the matter more directly to the notice of our architects, and, singularly enough, a difference of opinion has arisen upon the very last point, it would seem to the non-scientific, that could possibly be raised, and that is the direction in which lightning strikes, whether downward from the clouds, or, having descended to the earth, it strikes the building from below and travels upward again. The downward course has the majority of adherents certainly, though those advocating the upward tendency are numerous and persistent, and fortify their position with such reasonable argument as to be, in a measure, conclusive. The result of the discussion thus far has been to establish the necessity of four qualities in the rod, (1) size, (2) continuity, (3) earth contact, (4) pointed summit. The first requires that sufficient capacity should be assured for the accommodation of the electric fluid; the second, that continuity should be absolutely perfect, joints avoided as far as possible, and when unavoidable that they should be well soldered; the third and probably most important is that the rod should terminate in a mass of metal and be implanted in earth permanently damp; and fourth, that the summit of the rod should be a point, short and thick; too sharp a point is readily fused, while one that is too blunt has not sufficient conductive power.

I don't know but that I have dwelt rather more upon this subject of lightning than may be thought necessary, although it is one so fruitful of mischief and full of destructive elements as to make it of interest, I should think, to every architect.

A rather singular case with an unusual (for this country, at any rate) termination is reported from Belgium, where the architects of a large building brought a suit in copyright against the proprietors of a local paper for publishing without their permission an engraving of the building designed and built by the architects in question. The paper claimed that inasmuch as the building was completed, stood upon a public street, and was freely open to the public for inspection, it became, in a question, public property, and therefore they were entitled, or at least excusable, in reproducing it. The judge thought otherwise, however, and compelled the paper to print an apology and pay the costs of the action. I would not undertake to question the justice of this decision, for I do not feel qualified to do so, but I fear if the law prevailed here, it might be taken advantage of to such an extent as to put illustrations of this character almost under a ban.

A very decided movement has been made to improve the condition of the tenement houses of this city. Attention was publicly called to their absolute unfitness as dwellings, by Pro. Felix Adler, the young liberal preacher, who went out from Judaism and established an independent and entirely unsectarian organization for rational preaching and good works among the poorer classes. His weekly discourses are attended by many of the prominent and intellectual people among us, Jew and Gentile alike, and among his other excellent endeavors, this latest one of reform in tenement existence is certainly worthy of all the support it is receiving. He has finally persuaded our lethargic city government to take hold of the matter, and it begins to look as though the miserable rookeries and sinks that have been a disgrace ever since this island was called New Amsterdam are about to be cleaned out and renovated. A law was passed not long ago, making it necessary that the plans of all proposed buildings be submitted to the Board of Health, and that Board would determine as to the sanitary prospects of the building, its air, ventilation, cleanliness, its strength, safety, etc. So the more recent buildings combine most of the modern improvements, and objectionable features are not permitted to intrude. The difficulty is with those tenements which have been made from previously private dwellings or warehouses. Lacking the conveniences for the accommodation of masses, they have degenerated into pestilential spots, from which originate seven-eighths of the violence and crime to which we are subjected. In contending with this, Professor Adler has had, and the Board of Health will have, not only the opposition of the owners of the property who naturally are opposed to any compulsory expenditure of capital, but actually the opposition of the tenants who have, as a rule, become so accustomed to the degradation and filth of their surroundings as to object to any change for their seeming improvement. The depth to which the worst element of New York's population has sunken, is almost beyond belief to one who has had no opportunity of visiting their living-places. Four families living in one room is by no means an uncommon incident, and it can be readily understood that the atmosphere in these buildings is almost overpowering. Public baths have been established, hoping to encourage these people in cleanliness, but the effort has been fruitless; the baths are patronized, but not by this class; shop girls and the great family of working men and boys throng the baths, together with newsboys and bootblacks. The criminal mass is not found there, however; the stagnant, dirty, those who waste their time in these miserable tenements, smoking, gambling, murdering, never take the trouble to remove their clothes; certainly, they would scarcely attempt to bathe. So it is necessary, if any-



COTTAGE DESIGN.—NEW YORK ARCHITECTURE.

FRONT ELEVATION OF A COUNTRY DWELLING, COSTING ABOUT $2,500.

thing is to be done to better this condition of affairs, to do it forcibly, and this is now being attempted. The disposition to visit these low places has become very marked, and parties of ladies and gentlemen are made up to take a tour of the "dives" and under-ground resorts of the lower wards. The recent expeditions of the Prince of Wales through the slums of London have served to popularize this sort of entertainment in England, although the residents of the localities in question are said to resent the intrusion with considerable warmth, increased, no doubt, by the fact that the ladies of the parties wear heavy cloaks to conceal their fine dresses and jewelry. This divertisement is now known as "slumming."

. . . . . .

The cottage I show this month is designed for an inexpensive affair, though combining many excellent features. The exterior arrangement of piazzas and shade is well arranged for summer use, the small balcony from the second story being adapted to pleasant afternoons and protection from the sun. In studying the plans, shown at the upper corners of the plate, it will be seen that each room has one or more windows, insuring thus perfect light and ventilation. The plans show the wing that may or may not be attached to the house proper. The rooms in this wing have been designated as "New Chamber," "New Library."

Estimating Quantities of Paint.

IN a former paper we attempted to offer some suggestions on the measurement of surfaces; our attention may now properly be given to the consideration of some of the causes of variation in estimating quantities, some of which seem to be entirely lost sight of, and others are only partially understood.

Nature of Surfaces.—On all wooden buildings there are places more or less numerous which cannot be reached with a brush, so that the paint applied can be spread with the same care than it can on the more exposed portions. The edges of the siding, the joints and cracks between boards, the almost inaccessible portions of brackets, scrolls, latticework, and other ornamental parts, absorb a much greater quantity of paint than an indifferent or inexperienced person could easily guess, and unless some allowance is made for them, there is quite likely to be disappointment. Old buildings which have been allowed to stand many years without painting usually have a rough and peculiarly absorbent surface, caused by the swelling, shrinking, and decay common to wood unprotected by paint. This will apply even more forcibly to buildings which have never been painted. On new buildings, also, there is a great difference between the quality and finish of lumber, which the painter would do well to note—some being extremely shaky and porous, and perhaps poorly planed, while others present an entirely satisfactory surface. Brick buildings present some quite noticeable variations, both in the material of which they are made and in the quality of the mason work. Some brick have a hard, smooth surface; others are soft and porous. The hard brick are much more durable, and of course require less paint to cover them.

The same general hints will apply to interior surfaces. Allowance must be made for the finish of walls which are to be painted. The rough walls now preferred by many on account of their durability, require a great deal of paint and sometimes a coat of glue size between the first and second coats of paint, to give them anything like a fine appearance. On interior woodwork, elaborate architectural features, in the shape of mouldings, panels, cornice, continuously projecting and receding, with very little really flat surface, much more time and material are required to suitably finish them than plainer work.

Mismeasurement.—Without a proper basis for calculating quantity, it is impossible to be accurate. If some portion of a building has been carelessly omitted from an estimate, if a blunder has been committed, if proper allowance has not been made for trimmings and surfaces, it will be impossible to secure an accurate estimate. It will be well to add ten per cent. to the quantity determined upon on the basis of measurement to cover contingencies. It is better to have a little paint left after a job is done than to run short.

Climate.—The state of the weather affects the covering qualities of paint, on account of the susceptibility of oil to cold and heat; hence more paint will be required to cover a given surface in cold than in warm weather.

Manual Skill.—Besides the difference in surfaces and conditions, there is quite as marked a difference in the skill of workmen. A strong, active man who handles the brush in a masterly way, making telling strokes without waste in laps, will make paint go further and do better work than a weak or an indolent man or boy. The idea that men who are equally proficient at the dinner table are in all other places, is not a correct one to be guided by in selecting workmen. Skill is nowhere more valuable, and in few places more economical, than among painters.

Paint.—The quality of paint determines in a measure its covering power. That which is made of pure linseed oil, properly mixed, and of the right consistency, possesses the greatest covering power as well as the best preservative qualities, and it is to paint of this kind, as distinguished from cheap alkali paints, that our remarks are designed to apply. If these hints are duly considered in estimating quantities, we think that the apparent inconsistencies of the claims made for the quality and covering capacity of good paint will not seriously puzzle unprejudiced minds. Every man ought to know that it will take more paint to cover a rough surface than a smooth one, as well as that it will take more strength to draw a heavy load up a hill than on level ground. —*The Painter.*

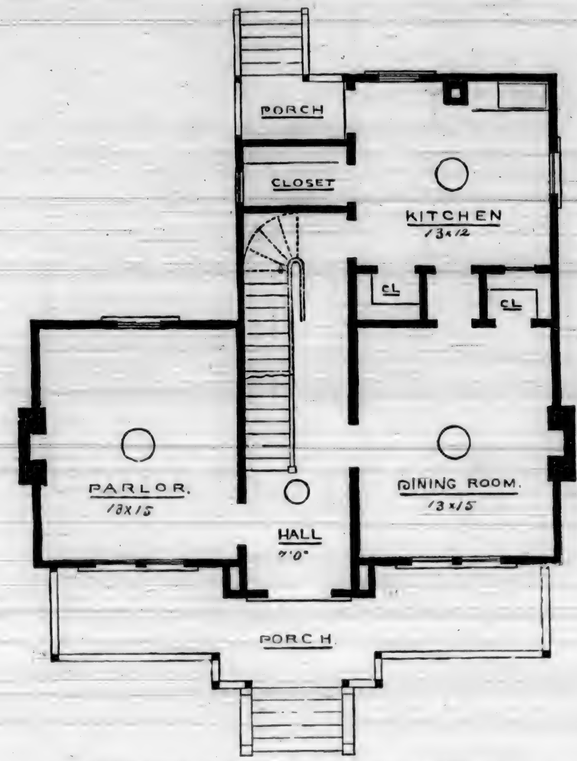
Painters' Measurements.

WE have taken considerable pains to look into the matter of measurement of surfaces to be painted. In addition to our own knowledge, we have inquired of practical painters accustomed to estimate on work, concerning their methods of calculation, and we have failed to find any uniform scale or rule by which to measure surfaces. Nearly all master painters have a basis of calculation, but the accuracy of their estimates depends so much upon personal judgment as to the nature and extent of variations, that their methods would be useless to persons of less accurate judgment. Besides, the methods vary according to the nature of the work and the training of the painter. No two would measure in the same way, perhaps; yet they might reach precisely the same results. Although it is true that very much depends upon the painter's judgment, we shall try to give a few hints which will be found in some cases entirely trustworthy, and in all helpful.

One way of measuring is to get the number of square feet in the sides and ends of a building as if they were flat surfaces, give a rough guess as to the dimensions of trimmings, etc., and let it go at that. This plan may work well for a good guesser, but for general use it does not prove very satisfactory. Another way on wooden buildings is to measure the length and exposed surface of one strip of siding, count the siding, and multiply the dimensions of one by the whole number on the side or end of a building, and the product will be surface measure; trimmings, etc., are measured separately. This is a better way, but its accuracy depends upon a pretty thorough acquaintance with compound numbers, as dimensions must be reduced to inches, then back to feet or yards, according to the basis of calculation.

Common siding are put on by the carpenter with one board overlapping another, and the lapping edge of the board is raised from perpendicular, so that it presents a diagonal instead of a flat surface, and there is also the exposed edge of the board, about half an inch, which should be included in the estimate. Suppose, now, that the exposed portion of a board of siding is four inches, the usual width, and the edge half an inch, it will give the side of a building just twelve and one-half per cent. more surface than it would possess if it were perfectly flat. Hence twelve and one-half per cent. added to the dimensions obtained by multiplying height and length together, will give the actual surface measure of common siding.

In drop siding, which are frequently used, there is an exposed edge of about half an inch, and about one-fourth inch more surface on the moulded edge than there would be if it were flat, making a total gain over flat surface of three-fourths of an inch on each piece of siding, or eighteen and three-fourths per cent. Hence eighteen and three-fourths per cent. should be added to the dimensions in square feet of the side of a building to get the actual surface measurement for drop siding.



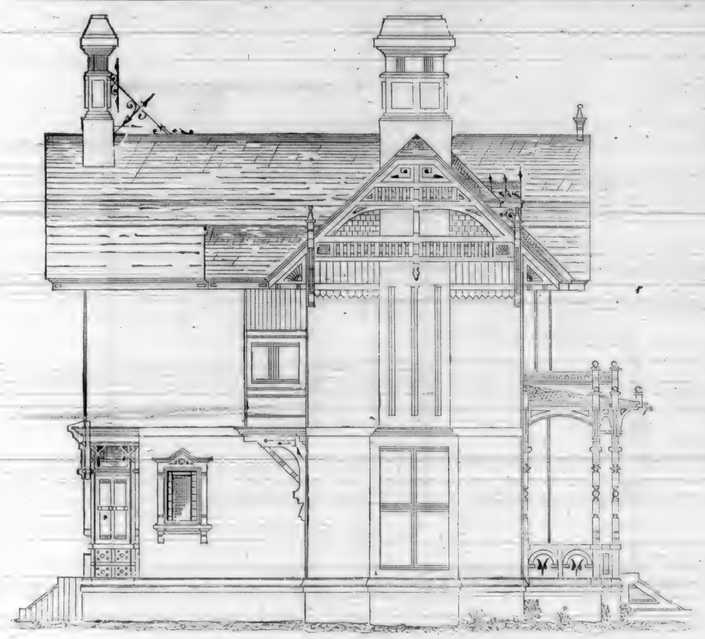
FIRST STORY PLAN OF $2,500 COUNTRY DWELLING.

In measuring the gable ends of ordinary buildings, the dimensions should be one-half less than actual square measure. For instance, the end of a building is twenty feet wide, and it is ten feet from the level of the frame plates to the point of the roof, multiply the width, twenty feet, by one-half the height, five feet, and we have one hundred square feet, total surface of gable end. This rule will not apply to buildings with very steep roofs, nor to cottage structures with a number of small gables.

Measurement of sides of buildings solid without deducting openings, like doors and windows, would probably average well as a basis for determining the quantity of paint required. Windows vary in size, and some frames and casings are elaborate in design, while others are quite plain. For good-sized windows, with very plain frames, about one-third less than solid would be a safe calculation; while for others, with heavily moulded caps and wide casings, with perhaps narrow openings, a solid surface estimate might fall a little short. These variations must be duly considered and calculated for by the painter. Cornice and trimmings should be measured separately. If there are panels with beads and other projecting and receding features, brackets, etc., carefully measure one of each, count the number on the building and multiply by the dimensions of one, and the product will be the total dimensions. Open brackets on cornices and scroll and lattice work on verandas, should be measured solid, as the edges fully make up for open spaces. The utter lack of uniformity in house trimmings compels more or less reliance upon the judgment of the painter in measuring them. We can suggest no rule for measuring which can be used with satisfactory results in all cases. What would be admirably suited to one building would be wholly unadapted to another, simply because the architectural features are unlike. Here there is no alternative but to exercise judgment in considering these important features.

In calculating the quantity of paint required upon the basis of surface measurement, from twelve and one-half to forty per cent. should be allowed for trimmings, etc., according to their size and shape. For plain work from fifteen to twenty per cent. will be found a fair average. This depends, however, upon the number of windows, style of frames, etc. We do not announce this as a positive rule.

On Queen Anne structures, which are



SIDE ELEVATION OF $2,500 COUNTRY DWELLING.

painted with two or three body colors, and are burdened with numerous and elaborate trimmings, calculation must be made of the portions of the buildings to which the different body colors are to be applied, either by divisions of total measurement, or by separate measurements, and the trimmings considered separately.—*The Painter.*

The Art of Picture Hanging.

How to hang pictures so as to prevent their killing each other or being killed by their surroundings has ever been a difficult matter. In a collection it is impossible that all the pictures should be hung in a row nearest the natural range of light. Yet even having this manifest advantage, killing is frequently effected by adjacent contrasts of color. It is related of Turner that he did not consider his labors over when he had sent his pictures to the exhibition; he would wait until the hanging committee had done its work, and then on varnishing day would by a few magical touches so alter the tone of his work that all the neighboring canvases looked like foils carefully arranged to set off this one particular picture in the whole room. "He had been here and fired off a gun," said Constable on one occasion, when he found that the introduction, at the last moment, of a bit of scarlet into a gray sea-piece of Turner's had completely absorbed the color of his own picture.

For home decoration great care is required in the hanging as in the purchase of pictures. In selection the purchaser must be guided first by the size of the room. What appears mellow and harmonious in the great gallery will seem full of harsh outlines and discordant blotches of color when hung in the modest parlor where proper focal distance cannot be obtained. The size of the room and the color of the room must not violently contrast with the color of the picture. For instance, if a painting rich in reds and yellows of a tropical sunset is hung in a room lacking in bright color, its reds and yellows will glare with terrible fury; and a picture which is subdued in tone will have all its depth of color absorbed, leaving it gray and chalky, if placed in a position with warm surroundings. Even if picture and room are in complimentary tints, there is an art in hanging so that the painting may appear at its best. Generally this effect is produced when it is hung against the wall on a line nearest the natural range of eye. A second picture placed above this line may be tilted also, that the light of day should fall on the same angle as the pictured lights. That is, if the light in the picture appears to come from the right-hand side, the real light should likewise come from the right-hand side. Attention to these details may appear trifling to one who knows nothing and cares little for art, but the care extended will be amply repaid to them in the restful effect gained, while to the cultured, even mediocre pictures may be made to bear a charm that will make their possession a joy forever.—*Cincinnati Building Review.*

The Pavement of Workshops.

DR. KOCHLIN-SCHWARTZ notes the existence among certain workmen on the ground floors of factories, of a distressing though not painful œdema of the legs, which seems to be dependent in no way upon gout or rheumatism. The disease has only existed since the wooden flooring formerly in use was removed, although now the workmen have shorter hours and live under vastly superior hygienic conditions. The workmen themselves attribute this swelling of the feet and legs to the nature of the pavement. They dread especially asphalt, then cement, next comes stone flagging, and finally bricks, which they prefer to any of the others. It does not seem to be a simple question of standing upon a cold floor, since the brick pavements are as cold as the cement or the asphalt. If there be really any relation here of cause and effect, the evident lesson would be that wooden floors should always be preferred to the more modern style of pavements.

PUBLICATIONS RECEIVED.

Hints on Drainage and Sewerage of Dwellings, by William Paul Gerhard. It has been the author's aim in this new work to give an account of the usual condition in which plumbing work, done years ago—and some done quite recently—may be found, and also to give suggestions on the proper manner of doing the work. Beautifully illustrated, and should be in the hands of every one who desires a thorough knowledge of sanitary matters in connection with their dwellings. **Price $2.50.**

Cummings' Architectural Details. A few copies of this publication on hand. **Price $6.00.**

Modern House Painting. A new edition of this popular work just received. It is much superior to its predecessor. **Price $5.00.**

Plummer's Carpenter's Guide, being a handbook for workmen, also a manual of reference for contractors, builders, etc. **Price $1.00.**

Practical Carpentry (new). Price $1.00.

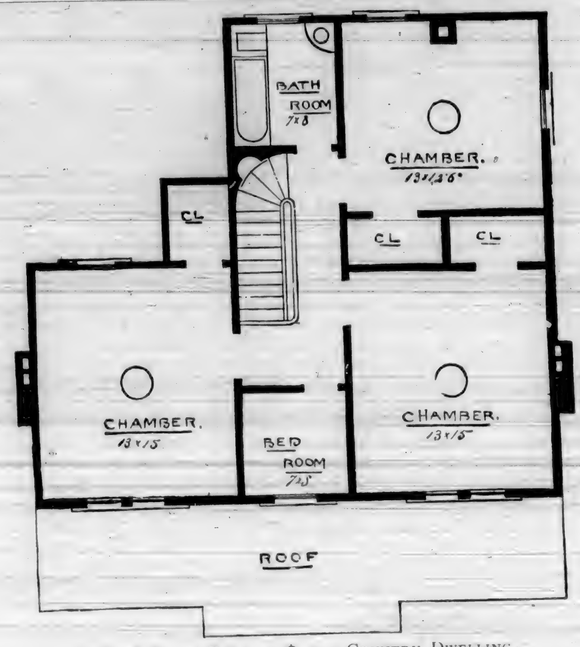
Artistic Coloring on Exteriors.

THE profession of house painting is gradually assuming its proper position in art, but it moves very slowly. This is especially true of that branch of it which pertains to exterior painting. Many painters pay little or no attention to the combinations of color they use on such work, but leave the selection entirely to customers, a course which has many objections. Few of these customers are practical painters, and hence are incompetent to select the colors required to make their buildings look symmetrical and artistic. The painter should get a customer's idea of what he wants and then use his knowledge and judgment in making the proper combination. If a customer thinks some color is not correct which may be proper, pleasantly prove to him it propriety, and he will be satisfied and places confidence in the painter's ability and judgment. But if painters persist in yielding every point, through fear of giving offense, they can hardly expect to win the confidence and esteem due to competent workmen. I do not mean that the painter should be dogmatic, or that he should attempt to inforce radical or impracticable views of coloring upon those who may seek his advice; but that his knowledge of the business he follows should be so thorough that

any suggestion he may offer will be entirely consistent with true standards of excellence.

I have seen many houses painted with good combinations of color, which looked poorly on account of the surroundings. The painters employed not having sufficient range of vision to take in the surroundings, the buildings were painted without due consideration of them. This is a common defect. I have also seen houses placed very close to each other, without the accompaniment of lawn or shrubbery, all painted about the same, which is in bad taste. Supposing these houses were painted with a very good combination of colors, the taste displayed is still defective; for a variety of good combinations, one helping the other, would be much better, give better satisfaction to the occupants, and please the passers-by. But supposing the occupants of this row should all decide upon having their houses painted the same color—say, for instance, an olive color—it is quite an easy matter to have them allow of a shade of difference in the color used, provided it is called olive. Now, make one house a little more of the yellow than another, the next a little greener, and another with a brown cast, and by so doing, some of the buildings appearing cool, others warm, and so placed that one is complementary to the other, a very much better effect is obtained than would be the case if all were painted exactly alike. Even in business blocks it is preferable to paint with different combinations of color, as one color helps another, and the peculiar color of a store becomes identified in the public eye with the business and the location. Let a painter but hint at the advantage of this style of coloring as a means of advertising, and see how readily he will be allowed to have his own way.

Another class of houses which has been sadly neglected as to artistic painting is farm-houses. They are generally painted, if at all, simply with a view to the preservation of the wood without respect to artistic appearance. If there is any one place more beautiful than another in this world, it is a well-cultivated farming district dotted with artistically painted farm-houses. The farmer not being an artist, this part of the beautifying process devolves upon the painter, and for humanity's sake, as well as the advancement of his business, he ought to do his best, as there are few men who like to show off their houses, especially if they are beautiful, better than the farmer. There are combinations of color which may be used with good taste on houses in a crowded city, which would be absurd on a farm-house. In painting such a house the sky should be taken into consideration as well as the other surroundings. Houses on the north and east sides of the road or under the cool aspect of the sky, should be painted a warmer hue than those on the south or west sides or under the warm aspect. A house which has elevated land for a background, should be painted a warmer hue than one which has the sky for a background. If olive colors are used, they should be light and of a warm cast. The light, bright, cheerful colors are preferable, as they are in strong, pleasing contrast with nature, which surrounds them on all sides.



SECOND STORY PLAN OF $2,500 COUNTRY DWELLING.

In cities and towns we find many wooden houses situated beside brick buildings, and sometimes between two such buildings. In such cases it is proper to paint the house so situated with a cool color, like olive, bluish gray or any other cool shade that will contrast well with the warm color of the brick house next to it. Where there is a row of dwelling houses to be painted, it is a good plan to paint them in different colors, alternating warm and cold. For instance, paint one red, another olive, another citrine, another of a bluish color, and so on until all have been painted, so as to make a good combination of the completed job. If painted in this way they will look well collectively, and each house will be made to look well by contrast, provided all are arranged as they should be.

There are a few artists among house painters, but the majority of them seem to know very little about the harmony and contrast of color, and what they do know they have learned intuitively from working among colors, not by hard study and experiment. No painter, no matter how good his taste may be for color, can make perfect combinations without making a life study of the subject. In years gone by the study of color has been sadly neglected, especially by those men who are most benefited by it. But the present seems to be making up for lost time. Nearly every scientist and mechanic who knows anything about color is studying and writing for the benefit of others, and the painter of to-day who does not study and read all he can find written on the subject of color, will in a few years find himself far behind the majority of the men working in the house painting business.—*The Painter.*

How Shot Are Made.

A SHOT-TOWER is an immense brick structure, 150 feet high, resembling a light-house more than anything else. Visitors are conducted up a spiral staircase inside, to the top, where a fine view is obtained for miles about, but the view down the inside is not so pleasant. The opening where the shot descends becomes narrower and narrower, until nothing is seen at the bottom but darkness. At the top of the tower are the furnaces for smelting. From these lead is poured into pans, set in the tower, with perforated sheet iron bottoms. The melted lead comes through these holes and enlarges on the other side, forming into globules before it falls down to the well beneath, holding several feet of water. The large shot drop the whole height of the tower to the bottom, but the smaller sizes only about half as far. One peculiar thing is, that small shot generally expand in falling, and the larger sizes contract. Very great care is necessary in mixing the metal, as it would run through the holes and drop in strings if not of the proper proportions, and no shot could be made at all.—*The Manufacturer and Builder.*

Band Saws.

We have recently received from M. Dugoujon Aine, of Paris, a very useful article, giving "Directions for the proper way of using and sharpening band saws." We print it below, for the benefit of our readers, together with the illustrations, which will enable the reader better to understand the directions:—

Considering the many difficulties that have arisen in the use of band saws, "arising for the most part from an imperfect knowledge of how to treat them, we think it not out of place to give a few instructions on this point, the observance of which we judge indispensable to obtain satisfactory results in working. The first thing required of band saws is that they should not break. Band saws, as a rule, do not break because they are too hard, or of inferior quality, or too strong or too weak; but they break because the tooth is an unsuitable one. It is important to make use of such teeth only as from their form will best adapt themselves to the action of rolling and unrolling from one pulley to the other. It is found that it is only every other tooth that breaks, and especially when they are like those shown in Fig. 1.

Fig. 1.

This is accounted for by the fact that the teeth, when set, produce upon the pulleys the same effect as a chain does when running edgeways on a pulley; that is, instead of adapting itself to the pulley and forming a regular curve, it forms a number of short, straight lines as shown in Fig. 2. Each one of

Fig. 2.

these straight lengths out of the regular curve is sufficient to cause a break.

We have said that all sharp angles prevent the proper running of the saw round the pulley, and that the only teeth that are not likely to break are those with the bottom or angle well rounded. It is a very easy matter to make teeth suitable for all kinds of wood and yet fulfil these conditions, as, for instance the tooth shown in Fig. 3. This tooth, when

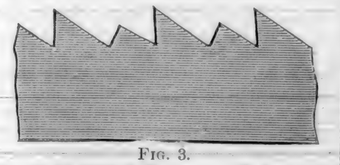


Fig. 3.

properly sharpened, no matter what the size of tooth or space between them, will fulfil the required conditions, whereas 90 out of 100 sawyers will sharpen as in Fig. 4. In this

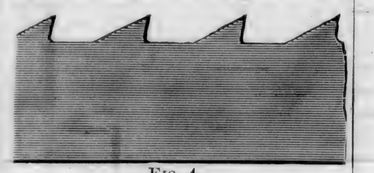


Fig. 4.

case, by the routine of the workmen, the sharp angles are reintroduced, as also the consequent liability to break. But on the contrary, by keeping up the form of tooth shown in Fig. 3, the saw, when heated, will easily stretch without breaking, as the edges present no sharp angles; besides which, the saw adapts itself more easily to the pulley on account of the wide space between the teeth, and so, again, is rendered less liable to break.

As an example to show how easily anything having a sharp angular cut in it will break, you have only to take an ordinary square made of iron, brass, or steel, and pull it in opposite directions by its two extremities, and you will always find it break at the angle, as in figure 5. The same effect is produced on a band saw; it runs downwards, and, the wood being held firm, offers a resistance in the opposite direction; thus the tooth is pulled in the same manner as the square, and, like it, will break at the angle.

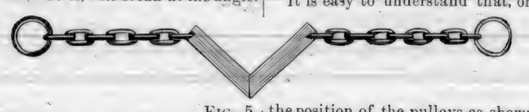


Fig. 5.

In order to keep up the shape of the teeth to Fig. 3, the best way is to grind the bottom of the wide spaces with an emery wheel, equalizing them with a smooth file, and to sharpen the points with a file. Or a diamond-shaped file may be used, as in figure 6. By either of these two methods the use of band saws may be rendered much less difficult and troublesome. Numbers of persons use band saws without having any idea as to the conditions required of the machine to insure proper working, so we will just note them down:—

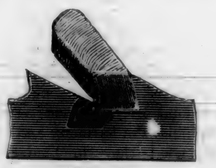


Fig. 6.

1. The diameter of the pulleys should be as large as possible, being however in proportion to the work to be done. 2. The two pulleys and the two guides should be kept perfectly parallel one with the other. 3. The two axles of the pulleys, on the contrary, should be a little wider apart at the front of the machine than at the back, as shown in Fig. 7. 4. In order to run well and easy the back of the saw should always be close up to the flange of

Fig. 7.

the pulley. On this account, and in order to pass smoothly through the guide, it is very important that the saw should be well dressed at the back, but not straight, for a well-made saw is slightly hollow on the back (see Fig. 8).

It is easy to understand that, on account of the position of the pulleys as shown above, the saws should have a corresponding curve. Saws made in the manner indicated, and maintained in the same state, make the work very much easier; the saw wants less stretching and gives a better result, and consequently requires less power for a greater amount of work. By

Fig. 8.

taking care always to use saws sharpened by good workmen and to keep them well sharpened, it will be found that, instead of increasing expense, a great saving may be made, caused by the consequent avoidance of breaks and by the better work and greater amount produced.

One of the most important points in a band saw is a good joint. The following is the best way of making it. First file slightly the two ends to be joined, in order to take off any grease or other foreign matter that may be upon them, but without making them any thinner. Then lay one end over the other as in Fig. 9 and 10, and keep them in their places with two bits of iron wire. Then tie on very fine brass wire, which sprinkle over with borax, after it is bound. Then melt the brass by means of a special forge for the purpose, or with brazing tongs, or with gas

by means of a blow-pipe. But in this last case it would be necessary to have special bellows *ad hoc*, which is not always an easy matter for every one to establish. Brazing tongs will suffice for saws up to 1¼ in., but as a forge is required to heat the tongs, it would be better to use a forge with a double blast, so arranged as to soften only just as much as is necessary for brazing the joint. When the brass is melted, let the saw cool without putting it into water, then tap the brazed part lightly with a hammer, to loosen and shake off the borax; and, lastly, reduce the joint to the same thickness as the rest of the saw, either with a file or an emery wheel.

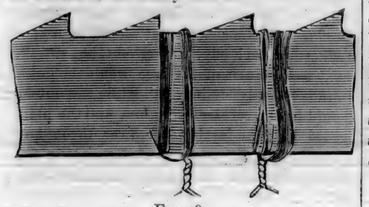


Fig. 9.

M. Dugoujon, in conclusion, states that he has patented a special grinding machine for finishing these joints. By means of this machine the joints can be made much better

and in much less time than with a file, and the expense of the emery wheels is incomparably less than that of files. This same machine with a thinner emery wheel is very useful for gulleting circular saws and for sharpening band saws.—*Timber Trades Journal.*

Removing Spots from Gilt Frames.

Gilt frames are liable to become spotted and look bad, while it is, as a rule, difficult to remove the spots. Rubbing does not answer, for the stain sticks tighter than the gilding itself, and washing is liable to loosen the gilt if put on with gum or dextrine.

The *Papier Zeitung* recommends the following method of renovating gilt frames. It consists in applying with a camel's hair pencil a gum solution to which has been added gold bronze having the color of the frame. Before mixing with the gum water the bronze must be washed with water until it runs off perfectly clear. If one application does not suffice it may be repeated until the spot entirely disappears, but of course one coat must be dry before the next is applied.

Spots treated in this way look very well at first, but it will not last, for it is not able to resist the moisture in the air unless it is specially prepared. For this purpose an ordinary bristle brush is rubbed with a piece of yellow wax until it is somewhat sticky, then it is passed very lightly over the spot several times as when dusting it. This gives it a very thin coat of wax that hardens in two or three days; in the meantime it must be protected against dust.

New Publications Received.

"Hints on Household Tastes." By Chas. L. Eastlake.

A new edition of a popular work by an author that is known in nearly every civilized portion of our globe. We quote from the author's preface the following:—

"Fifty years ago an architect would have considered it beneath his dignity to give attention to the details of cabinet work, upholstery, and decorative painting. But I believe there are many now, especially among the younger members of the profession, who would readily accept such commissions if they were adequately remunerative, and that they might become so is evident from the fact that the furniture of a new house frequently costs as much, if not more, than the house itself. *And when clients lead the way we may be sure that manufacturers will seek assistance from the same source.* Price, $3.00, post paid.

"Album of Mantels, in Wood, Stone, Slate, and Brick."

This new work contains sixty large plates, containing designs for mantels of every description in wood, stone, slate and brick. The author is C. C. Buck, architect. We will mail a copy of this work to any address upon receipt of $5.00.

"Drainage and Sewerage of Dwellings." By Wm. Paul Gerhard.

In this work the author shows the difference between the way plumbing work is done now and that of years ago. All the improved systems of sewerage are clearly illustrated and explained. The advantages and defects of different traps for wash-basins, sewers, water-closets, etc., are treated in an intelligent manner. The book should be in the hands of every one who desires a thorough knowledge of the sanitation of dwellings. Price, $2.50.

"The Air We Breathe and Ventilation."

This book is the second number of the Mott series. The aspirating system of ventilation has been presented to the exclusion of other systems which have been proposed, for the reason that the writer considers the principle on which that system is founded to be correct. Price, $1.50.

"History of Architecture in all Countries from the Earliest Times to the Present Day." By Jas. Furguson.

This work is one that should be in the possession of every architect. Especially should students and draughtsmen secure a copy. Being a reprint of the London edition the price has been materially reduced. Two large volumes, containing over 1,200 pages, beautifully illustrated. Price, complete, $15.00.

"Building Superintendence."

This new work is of invaluable assistance to the architect and builder. It is written by a gentleman long connected with the architectural profession, and is eminently practical in its character. We will send a copy to any address upon receipt of $4.00.

"Buck's Designs in Architecture."

This new work contains over seventy pages of designs for country dwellings, together with plans and estimates of cost—the latter according to New York prices. Allowing for the difference in price of material, a fair estimate may be made for which the design selected could be built on this coast. Price, 50 cents.

"Peck Bros. Illustrated Catalogue and Price List."

This is the finest catalogue we have yet received in the way of presenting a complete list of all the articles used by the plumber and gasfitter. It also contains all the new designs in brass goods, and a very complete representation in the line of copper, iron, and earthen ware, water-closets, traps, etc., etc. It contains about 600 pages, beautifully and artistically illustrated, with the price of each article in all the different sizes. It is issued by Peck Bros. and Co., of New York, R. W. Snow being the general agent on this coast.

Our Exchanges.

We have made arrangements with the editors of the following journals, by which we are enabled to offer quite a reduction to any one subscribing for any one of them in connection with this journal.

(The figures in parenthesis denote the price of the journals alone.)

California Architect and Building News.
Terms, $2.00 per annum.
With *American Architect* ($6.00), $7.00 per annum.
With *Builder and Wood Worker* ($1.00), $2.50 per annum.
With *American Artisan* ($1.00), $2.50 per annum.
With *Brick, Tile, and Metal Review* ($1.00), $2.50 per annum.
With *Building* ($1.00), $2.50 per annum.
With Special Edition of *Building* ($5.00). $5.75 per annum.
With *Scientific American* ($3.20), $4.50 per annum.
With *Decorator and Furnisher* ($4.00), $5.00 per annum.
With *American Machinist* ($2.50), $4.00 per annum.
With *Cincinnati Building Review* ($1.00), $2.50 per annum.

Theophrastus, a Greek writer who flourished in the fourth century before the Christian era, in a work entitled the "Book on Stones," describes an earthly substance which would kindle and burn, and which was used by smiths. There can be no doubt that he refers to coal, and that this is the earliest passage in which that substance is expressed or mentioned.

A man's labor, well applied, is always amply sufficient to provide him during his life with all things needful to him, and not only with those, but with many pleasant objects of luxury, and yet, further, to procure him large intervals of healthy rest and serviceable leisure.

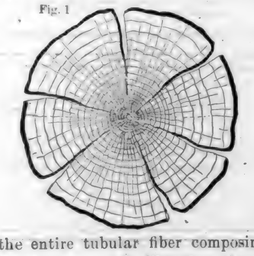
Steel Sinks.

How Lumber Shrinks.

A STORY is told by the "Arkansaw Traveler," about the manner in which lumber was "hauled" across the mountains down in his country. "Why!" said he, "they saw it green, leave it in the sun, and off it starts. I have seen a board turn three summersaults in less than a minute, and get to the other side of the mountain before sunset." "What," asked a by-stander, "would be the result if it was attacked in its wild career by a shower of rain, would it come back?" Here was a poser, but the traveler was equal to the occasion and replied: "No, it would turn on the other side and continue its course."

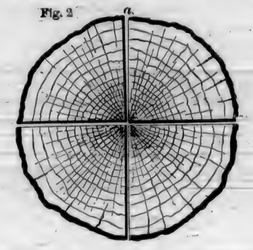
The subject of the contraction of lumber is an interesting one to wood-workers, and the doors and shutters in many of our mushroom cities are said to come off the hinges in retaliation of the persistent disobedience of the natural law of shrinkage. An examination of the end of an oak or beech tree will show the arrangement of its structure. It consists of a mass of longitudinal fibrous tubes, arranged in irregular circles, that are bound together by means of radial strings or shoots, which have been variously named; they are the "silver grains" of the carpenter, or the "medullary rays" of the botanist, and are in reality the same as end wood, and have to be considered as such, just as much as the longitudinal woody fiber, in order to understand its action. From this it will be seen that the lateral contraction or collapsing of the longitudinal, porous, or tubular part of the structure cannot take place without first crushing the medullary rays, hence the effect of the shrinking finds relief by splitting in another direction, namely in radial lines from the center, parallel with the medullary rays, thereby enabling the tree to maintain its full diameter, as shown in Fig. 1.

Fig. 1



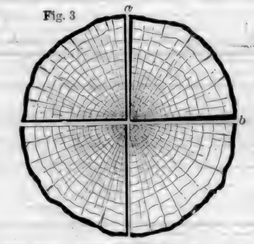
If the entire tubular fiber composing the tree were to contract bodily, then the medullary rays would of necessity have to be crushed in the radial direction to enable it to take place, and the timber would thus be as much injured in proportion as would be the case in crushing the wood in the longitudinal direction. If such an oak or beech tree is cut into four quarters, by passing the saw twice through the center at right angles, before the contracting and splitting have commenced, the lines $a\,c$, and $c\,b$, in Fig. 2 would be of the same

Fig. 2



length, and at right angles to each other, or, in the technical language of the workshop, they would be square, but, after being stored in a dry place, say for a year, it would then be seen that a great change had taken place both in the form and in some of the dimensions; the lines $c\,a$, $c\,b$ would be the same length as before, but it would have contracted from a to b very considerably, and the two lines $c\,a$ and $c\,b$ would not be at right angles to

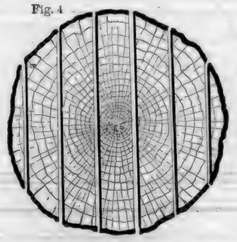
Fig. 3



each other by the portion here shown in Fig. 3. The medullary rays are thus brought closer by the collapsing of the vertical fiber.

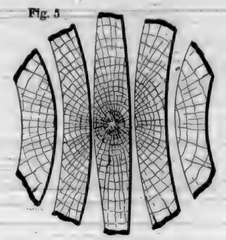
But supposing that six parallel saw cuts are passed through the tree so as to form it into seven planks, as shown in Fig. 4, let us see

Fig. 4



what would be the behavior of the several planks. Take the center plank first. After due seasoning and contracting, it would then be found that the middle of the board would still retain the original thickness, from the resistance of the medullary rays, while it would be gradually reduced in thickness toward the edges for want of support, and the entire breadth of the plank would be the same as it was at first, for the foregoing reasons, and as shown in Fig. 5. Then taking the planks at

Fig. 5



each side of the center, by the same law their change and behavior would be quite different; they would still retain their original thickness at the center, but would be a little reduced on each edge throughout, but the side next to the heart of the tree would be pulled round or partly cylindrical, while the outside would be the reverse, or hollow, and the plank would be considerably narrower throughout its entire length, more especially on the face of the hollow side, all due to the want of support. Selecting the next two planks, they would be found to have lost none of their thickness at the center, and very little of their thickness at the edges, but very much of their breadth as planks, and would be curved round on the heart side, and made hollow on the outside.

Supposing some of these planks to be cut up into squares when in the green state, the shape that these squares would assume, after a period of seasoning, would entirely depend on the part of the tree to which they belonged; the greatest alteration would be parallel with the medullary rays. Thus if the square was near the outside the effect would be as shown in Fig. 6, namely, to contract in the direction

Fig. 6

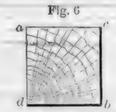
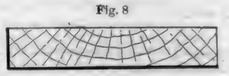


Fig. 7

from a to b, and after a year or two it would be thus, as seen in Fig. 7, the distance between c and a being nearly the same as they were before; but the other two are brought by the amount of their contraction closer together. By understanding this natural law, it is comparatively easy to know the future behavior of a board or plank by carefully examining the end of the wood, in order to ascertain the part of the log from which it has been cut, as the angle of the ring growths and the medullary rays will show as in Fig. 8.

Fig. 8



A plank that has it will evidently show to have been cut from the outside, and for many years it will gradually shrink all to the breadth. While the next plank, shown in Fig. 9, clearly points close to the center or heart of

Fig. 9

the tree, where it will not shrink to the breadth, but to the varying thickness with the full dimensions in the middle, but tapering to the edges, and the planks on the right and left will give a mean, but with the center sides curved round, and the outside still more hollow. These remarks apply more especially to the stronger exogenous woods, such as beech, oak, and the stronger firs. The softer woods, such as yellow pine, are governed by the same law, but in virtue of their softness another law comes into force, which to some degree affects their behavior, as the contracting power of the tubular wood has sufficient strength to crush the softer medullary rays to some extent, and hence the primary law is so far modified. But even with the softer woods, such as are commonly used in the construction of houses, if the law is carefully obeyed, the greater part of the shrinking, which we are all too familiar with, would be obviated, as the following anecdote will serve to show: It was resolved to build four houses, all of the best class, but one of the four to be pre-eminently good, as the future residence of the proprietor. The timber was purchased for the entire lot, and the best portions were selected for house No. 1, but by one who did not know the law, and to make certain of success this portion of the wood had an extra twelve months' seasoning after it was cut up. The remainder of the wood was then handed over to a contractor for the other three houses, who had an intelligent young foreman, who knew the structure of wood, as well as how to obey the law, and who, therefore, had the wood for the three houses cut up in accordance therewith. The fourth house was built the following year by another man; but long before ten years had passed, to the great surprise and annoyance of the proprietor, it was found that his extra good house had gone in the usual manner, while the other three houses were without a shrinkage from top to bottom.

A similar want of correct knowledge of the natural figure and properties of the structure of wood, such as the oak, is constantly shown by the imperfect painting to resemble that wood, as exhibited on doors and shutters of many houses. If we cannot afford to have genuine wainscot doors, as in France and other countries, but yet desire to have an imitation, it should surely be worth the trouble to have a block cut from the quarter of an oak tree, and to have each of its six sides planed and polished, in order to make plain their several features. The house painter would then see what nature really is, and thus save us from the ridicule of other nations, when we mix up "silver grains" and all the other natural features on one side of a board or panel. This is a subject that should interest all wood-workers and builders, and a great deal of attention should be given to the structure of the various woods. It is almost as necessary for a wood-worker to understand the anatomy of his tree, so to speak, as a surgeon to understand human anatomy before he commences to operate. The importance of the subject is therefore obvious.—*The Lumber World.*

*. We are indebted to the editor of the *Lumber World*, published in Buffalo, New York, for this article, as well as the cuts illustrating the same. It is with pleasure that we acknowledge the professional courtesy extended. Trade Journals in every portion of the country, are increasing in influence, and the one from which we produce the above should be found in every Mechanic's possession. The knowledge gained will far over-balance the small amount of money required for a year's subscription.

PATENTS AND INVENTIONS.

List of U. S. Patents for Pacific Coast Inventors.

From the official list of U. S. Patents in DEWEY & Co's. SCIENTIFIC PRESS PATENT AGENCY, 252 Market St., S. F.

FOR WEEK ENDING FEBRUARY 5, 1884.

292,987.—SELF SHIPPING BELT PULLEY—H. P. Christie, S. F.

292,992.—ALARM SIGNAL FOR HOT JOURNALS—Cornelius & Turner, Turner, Oregon.

292,900.—VEHICLE GEAR—W. A. Dawson, Stony Point, Cal.

292,910.—CAR COUPLING—J. M. Harper, Colfax, W. T.

292,932.—STEP LADDER—E. Markwick, Pinkney, Cal.

293,069.—HYPOTENUSE CALCULATOR—Daniel Patten, Calistoga, Cal.

293,087.—HORSE POWER—A. Robinson, Benicia, Cal.

293,093.—SCARF RETAINER—J. Sandilands, S. F.

293,104.—SPADING MACHINE—D. F. Spangler, Santa Ana, Cal.

293,130.—SAW—Geo. W. Wills, Portland, Oregon.

293,208.—GRASS COLLECTOR FOR LAWN MOWERS—J. H. Wyms, Oakland, Cal.

FOR WEEK ENDING FEBRUARY 19, 1884.

293,931.—TABLE FOR MANUFACTURE OF CANDY—C A Alisky, Portland, Oregon.

293,841.—FRUIT PITTING MACHINE—Chas. Alison, S. F.

293,932.—DREDGER—H. B. Angell, S. F.

293,627.—FIRE ESCAPE—S. D. Butler, Marshfield, Oregon.

293,853.—PORTABLE RAILWAY—John Dolbeer, S. F.

293,955.—WOOD PRESERVING COMPOUND—H. C. Dorr, S. F.

293,899.—CAR COUPLING—John Martin, Knights Ferry, Cal.

293,667.—SURVEYORS' TRANSIT—Thomas L. Nixon, New Tacoma, W. T.

293,984.—ADJUSTABLE WRENCH—A. B. Smith, S. F.

293,832.—REFRIGERATING CAR AND APPARATUS FOR SHIPPING MEAT—H. S. Widman, S. F.

3,291.—LABEL—Wells & Church, S. F.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific Coast Inventors transacted with perfect security and in the shortest possible time.

Brick Fronts.

THE overwhelming desire for a "neat job" has done mischief in brick work. A pressed brick wall is a monotonous thing when brick is used alone. It shows only mechanical precision and exactness, and these qualities become very tiresome when they are exhibited for their own sake and not as means to an end. A slight unevenness in texture and in color helps the look of a wall, and it is the aim of the maker of pressed brick and of the builder to avoid the slightest unevenness. The best-looking brick walls, except in the perverted eyes of bricklayers, are those in which the unevenness appears, that is to say, those which are built, not of pressed bricks, but of common bricks, chosen for color.—*New York Record.*

Harold D. Mitchell.

THIS gentleman may be justly termed a California educated architect; for, although the principles of the art were first studied in England, it was in this city that he applied them to the practical workings of the profession.

Mr. Mitchell was born in the town of Manchester, England, on the seventh day of April 1854. He early developed a taste for art, and, after passing through a collegiate course, he entered the ROYAL INSTITUTE OF ART in his native city. In this school his ideas and conceptions were moulded in a form in keeping with the high standard adopted by the Faculty.

His aspirations leading him to secure a more extended knowledge of architecture, as practised in different parts of this world, in 1870 he embarked for San Francisco. Shortly after his arrival in this city, he secured an engagement in the offices of Messrs. Wright & Sanders, and for eight years remained with that firm.

Having a strong desire to build up a business on his own account, in 1878 he severed his connection with the firm in which he had so long been engaged, and commenced business on his own account. His personal popularity, aided by a well-earned skill as a designer, enabled him at once to start a lucrative practice, and his success was commensurate with his ability.

Mr. Mitchell has designed many prominent buildings, among which are St. Luke's Church, Court House at Merced, the warehouse of Falkner, Bell & Co., the large buildings used by the Central Gaslight Co., etc.

HAROLD D. MITCHELL.

Mr. Mitchell's business has greatly increased since the beginning of the year, and he has been compelled to seek larger quarters. His offices are now in the Safe Deposit Building, and are fitted up in artistic style. He is a member of the San Francisco Chapter of Architects.

Window Ventilation.

NO TIME could be better than the present for beginning the practice of house ventilation by the window, which is still, in the majority of houses, the readiest and the safest means of obtaining a regular and constant supply of fresh air. The practice, begun in warm weather, may be carried on with proper care through autumn and winter. The constantly accumulating impurities derived from breath, from perspiration, from excreta of other kinds collected in sleeping-rooms, from the use of gas or lamplight, and too often, even now, from suction of sewerage gas from waste pipes by the heat of house fires, etc., render it as necessary for health as for comfort that these should have free egress, and that they should be substituted by the pure outer air. Fresh air from without may very easily be had without draught, and without risk of cold even to delicate persons if a few simple rules be observed. The cold air of winter, of course, enters with greater force and in greater proportional volume than the more equal summer air into a warm room. The aperture of ingress must be correspondingly diminished. Air from a window is preferable to that from an open inner door, no matter how roomy the house, from its more reliable purity. If the window be the inlet, the fire, fire-place, or it may be the door of a room in summer acting as an outlet, it may be opened from the top, the extent being regulated according to the outer temperature. There is then a direct inward current at the upper part, which follows the roof of the room, thus mingling with any heated waste products which require to be removed, and an interrupted current at the middle, the previous line of junction of the upper and lower sashes; both are broken and diffused by the blinds or curtains. Venetians for this purpose should be turned upward. A window should never be made to ventilate by opening it from below, unless the open lower space be filled up in some way and ventilation be carried on at the middle where the sashes join—otherwise draughts are unavoidable. The ventilating pane is a hardly less simple and equally efficient and safe method with either of the others. Window ventilation is especially useful in bedrooms, and its efficiency or otherwise cannot fail to affect the vital powers of the occupant, who, in his slumbers, must trust to other energies than his own for the removal of those impurities and morbific germs which his every breath multiplies around him.

Removing Spots From Gilt Frames.

GILT frames are liable to become spotted and look bad, while it is, as a rule, difficult to remove the spots. Rubbing does not answer, for the stain sticks tighter than the gilding itself, and washing is liable to loosen the gilt if put on with gum or dextrine.

The *Papier Zeitung* recommends the following method of renovating gilt frames: It consists in applying with a camel's-hair pencil a gum solution, to which has been added gold bronze having the color of the frame. Before mixing with the gum water the bronze must be washed with water until it runs off perfectly clear. If one application does not suffice, it may be repeated until the spot entirely disappears, but of course one coat must be dry before the next is applied.

Spots treated in this way look very well at first, but it will not last, for it is not able to resist the moisture in the air, unless it is specially prepared. For this purpose an ordinary bristle brush is rubbed with a piece of yellow wax until it is somewhat sticky, then it is passed very lightly over the spot several times as when dusting it. This gives it a very thin coat of wax that hardens in two or three days; in the meantime it must be protected against dust.

THE largest saw-mill at Port Blakely, W. T., was put to a test of its capacity one day a week or two ago. The whole cut of the day was 283,000 feet, the largest previous day's work being 224,000 feet.

A. A. Cook.

AS STATED in previous issues, it is not our intention to present a likeness of merely those who belong to the Chapter. We propose to give the history of all those on the Pacific Coast that are recognized as members of the architectural profession. Many have written to us, expressing their good-will to our Chapter, and regretting that distance prevented them from attending Chapter meetings. To all such we would say, You can help, no matter how great the distance, by your pecuniary assistance, as well as forwarding papers to be read, submitting sketches, etc., and the Chapter will gladly welcome those to membership whose character is of a high standing, and whose architectural ability is recognized by his fellow-brethren.

A. A. Cook, the subject of this sketch, is a resident of the city of Sacramento. He was born in Chenango County, New York, on the 20th day of April, 1832. In May of the same year, his parents moved to Albany, in which place he received his first lessons in the practical workings of the carpenters trade. In 1848 he was apprenticed to the carpenters and joiners trade.

It may be interesting to our young mechanics of to-day to know the value of apprentices' wages forty years ago. The first year Mr. Cook received $50.00, the second year $75.00, and the third year $100. In those days, however, a three-years' apprenticeship, if the student was faithful, enabled him, at the expiration of the time, to readily assume the duties of an "old hand."

We find the result, in the present case, of the value gained by the appropriation of every minute of time during youthful days. In winter months, a prominent architect gave Mr. Cook instruction in practical geometry and architectural drawing, and, also, thorough his influence, enabled Mr. Cook to gain access to libraries containing works on architecture and carpentry. In those days books treating on those subjects were very rare. The works thus obtained were faithfully studied, and their principles fixed in his mind.

He also showed an aptitude for the art and science of hand railing, and such was his proficiency that, while still under twenty years of age, we find him giving instructions to a class of young mechanics.

In 1851 Mr. Cook moved to Kalamazoo, Mich. For nine years he was one of the prominent builders of that place; every spare moment was given to the study of the profession which he had selected for his future business. After visiting several places, we find him located in Council Bluffs. In this town he began strictly the architectural profession, and several prominent buildings were designed by him, including the largest hotel, at that time, west of Chicago.

His health failing about this time, and, hearing of the great salubrity of the climate in California, he started for this coast, and arrived in Sacramento in 1869. The benefits derived from the change soon proved that the journey was a wise one, and, in a short time, Mr. Cook was fully restored to a robust state of health.

A. A. COOK.

Although residing in Sacramento, Mr. Cook's practice extends over a great portion of the northern part of the State. Nevada also can show many buildings erected under his superintendence.

Mr. Cook possesses one of the finest and most complete architectural libraries to be found in any private office on this coast. He is always ready and willing to give instruction to the younger members of the profession, and students can always be found in his office, learning the principles of the science of architecture.

EXPERIMENTS have shown that a person speaking in the open air can be heard about equally well at a distance of 100 feet in front, 75 feet on each side, and 30 feet behind.

The Lumber Trade—Order Your Lumber.

DEALERS report "trade entirely satisfactory." But verbal statements in this connection are not necessary. The inaudible voice of hundreds of buildings in progress of erection, and the excavations being made in all parts of the city, proclaim the fact that materials are in demand in large quantities, and that those who manufacture and sell those suitable for building purposes, must be enjoying a corresponding degree of business activity. We say yet to those contemplating the erection of buildings requiring more than ordinary sizes and lengths of timbers, to pass in their orders as soon as practically possible, as extra dimensioned timbers cannot, as a rule, be found in our lumber yards in stock; consequently, as all such extra lumber will have to be cut to order, time may be saved by ordering early, as delays frequently occur in the transportation from mill to wharf—the winds and weather being very material factors in that connection. We have sometimes had orders filled within three weeks, under most fortuitous conditions, and in other cases, and, as a rule, from four to ten weeks. If a wharf at the mill should break down, as sometimes they do, and mix up ordered and stock lots of lumber, or if the vessel happens to meet a "stress of weather," or is beached, or runs on a reef, or bar, etc., more or less time is lost, and sometimes considerably *more*. Hence it is wise to order early, and order all that will be wanted, for if "everything is left to the last moment," it places matters in such a shape as to make them unpleasant; for when an order is sent from this city by a lumber dealer, he can do no more than say: "Hurry up," "expedite," etc., while the *doing* part is in other hands, and often the man at this end is helpless to remedy delays, at which excited and perhaps angered owners, architects, and contractors complain, and sometimes say naughty words.

Beautiful Finishes.

HARDWOOD finishes are the most lasting and beautiful that can be applied to a building. In California, the great expense attending their use debars many people from placing the same in their homes. Redwood, when properly prepared, and covered with Wheeler's Patent Wood Filler, cannot be told from the genuine hardwoods, except by an expert. This preparation should be used by every one who desires a lasting and beautiful finish.

Brooks As Sewers.

WHEN a natural watercourse traverses a town, and its banks become built upon, the easiest way of getting rid of filth and house wastes is to throw them into the stream. Every man's instinctive impulse is to get rid of what annoys him, and not to mind how his neighbor will be affected. After a while, when the watercourse becomes sufficiently nasty, the people come to a realizing sense of what they have brought upon themselves, and then they try to devise a remedy. In this they begin usually at the wrong end. They look on the stream as creating the nuisance, and don't consider that it is their abuse of the stream that is the source of the trouble. So they go to work and cover the stream up, and call it a sewer. What is the result? Simply that the stench of the foul matter in the old channel is bottled up somewhat, to be vented through every manhole, every inlet, and every house drain, and probably do more real injury than when the rotting filth was exposed to the air and the sun, and diffused its aroma through the whole atmosphere.

The channel of a small natural stream through a town or village should never be converted into a sewer for house wastes. This will strike a good many people as an odd doctrine. The functions of a natural stream and of a sewer are so diverse that one cannot be made to do duty for the other.

A natural watercourse serves for the drainage of the land all along its course. Its banks cannot be made water-tight without obstructing the natural progress of the water in the soil and backing it up and retaining it where it ought not to be retained. A sewer, on the other hand, is intended to carry off foul matters which must be gotten rid of as quickly as possible, and the channel for conveying them must be absolutely impervious, so that nothing can soak through it to the soil. As the level of the water in the soil rises and falls with the season and the amount of rain, an open-jointed or pervious channel would sometimes admit water from the soil and sometimes permit fluids flowing in the channel above the level of the ground water to flow out, and thus pollute the soil and the air in the soil.

Again, a natural stream draining a considerable territory is subject to great variations in its volume. A channel to carry its extreme discharge in floods must be many times larger than can ever be necessary for the carriage of the greatest amount of sewerage that can be brought to it. A large channel is not suited to the rapid removal of a small flow of filthy fluids, and, moreover, costs a great deal more than a sewer of the proper size. Even if the large channel for a fluctuating stream is built through a village, the sewerage from the houses should not be turned into it, unless the minimum volume of the natural flow in the driest seasons is large enough to keep the channel thoroughly scoured. There are a good many small towns which have for years gotten along without sewers, and have arched over natural watercourses, running through them, but are now impelled by the "sanitary revival" to construct sewers for removing household wastes. The first impulse is to utilize the covered streams to save the expense of constructing a few hundred feet of sewer. They should be very careful how they proceed. It is better to spend a little more money and be safe than to economize in the first cost and spend ten times the saving in doctors' fees and undertakers' bills.—*Sanitary Engineer.*

Educating Plumbers.

TRULY this is an age of progress, and in more ways than one. Take, for example, the question of education. Not very many years ago even good, skilled artisans could not make out a time-sheet and give a correct return of work done and materials used, but had to dictate to a clerk or other responsible person. This did not matter where men were working in communities, as in those cases there was always some one in charge to keep a proper record; but where they were working singly, it may seem far-fetched to say, but it really amounted to one man doing the work, and another had to keep an account of what was done; yet these men, perhaps, were first-class mechanics as far as workmanship goes. But the present generation have advanced considerably in this matter, thanks to the interest taken and the schools established, and now there are very few men who have not a fair knowledge of the three R's—that is, reading, 'riting, and 'rithmetic. Now, with this knowledge, the average working-man has grown to be more intelligent, it is true, but it is an open question if he is a better tradesman; and, as a proof of this, do we not continually refer to what was done ages ago as works of art, and also of construction, and hold up for admiration the work of our forefathers? But for all that the working-man is still the working-man; it is still the muscle that is required to do that which machinery fails to accomplish, so that in reality he is a piece of machinery. He has brains, it is true, but they only work in certain grooves in which they have always traveled. Ask a plumber why he warms the piece of lead that he may be working upon; he will answer, "*To soften it, to be sure, and make it easier to work;*" but ask him why heat softens the lead, and how many could answer? Again, ask him why he greases the prepared ends of a pipe before making a joint, and he will answer, "*To make the solder stick;*" there are exceptions, of course, but from the average tradesman no better answer would be given.

This age has always been referred to as one of progress, and one of the innovations of the age is "technical education." About this there is a diversity of opinion; some look upon it as an actual necessity, while others think it of no use or advantage. In using the term "technical education," it is meant in this case in the popular sense, in which a practical trade and all its cognate science subjects are taught together.

Germany, France, and Switzerland have for some years past taught various sciences in the same schools and concurrent with the ordinary education of youth, but it must be remembered that those countries depend mostly upon the productions of their industrial classes, so that "the more highly they are educated, the better for the country." But England, having such enormous natural resources, has not made the same progress in technical education as the countries mentioned, but the want of it has been felt, and efforts are now being made to make this movement more popular.—*James Mullens, in Sanitary Engineer.*

Care of Patterns.

ONE of the largest expenses of the producers of cast metal articles from toys to machinery is that of patterns. These must be made of the finest stock and by the most skilled workmen. All patterns are made originally of wood, which in the case of light articles are exchanged for duplicates in metal at once, just as the wood block for engraving is exchanged for the stereotype or the electrotype. But large patterns, as for beds for lathes, planers, and other heavy machines, and many other articles, must necessarily be of wood in permanence. How to keep these patterns in good condition when not in constant use has been a puzzle to many, but moisture proof as well as fire proof buildings have filled that demand. A greater annoyance and anxiety is caused by the difficulty of classification and arrangement, so that any particular pattern may be found at once. Where the patterns are limited to a certain stock of reproduced machines, it is easy enough to arrange the patterns in suits each part of a completed machine to be kept in one compartment. But where the demands on a foundry are of a miscellaneous character, it is impossible to keep a referable list with ordinary classification.

A shrewd manufacturer has overcome this difficulty by adopting the alphabetical order of the dictionary, a name being given to each pattern and piece when made, and entered upon a kept dictionary in the office, another, a duplicate, being kept in the pattern house. Illustrations might be given to show how the thing works, but this is not necessary. It is sufficient to say that under a single letter, G, there are no less than 200 entries, but all so distinct and discriminated that no difficulty is found in locating them in their alphabetical departments, or in charging them to each handler, as pattern room, foundry, or designing (draughting) room. By the addition of numerals to the alphabetical plan it is easily seen that any number of convenient subdivisions may be made.—*Scientific American.*

MASONS' and BUILDERS' EXCHANGE OF SAN FRANCISCO,

Room 11, 314 Montgomery St.

BELOW will be found a list of the members composing this Exchange. Boxes are provided for each member, so that architects, owners, or others desiring the services of any particular member, or those having boxes who are not members, and yet whose business is directly connected with that of the Exchange, can readily secure the attendance of the party sought, by leaving a note in the respective boxes.

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J. WAGNER, Wagner's Potrero Ave. bet. 22d and 23d Sts.	" 3
CRAWFORD FERRIS, 9 Bourbon St.	" 20
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J. B. SANFORD	" 50
JOHN MAGUIRE	" 74

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MCVICKER & ROACH, Stone cutters	" 8
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KENNY & MCCUE, Graders	" 44
H. & J. RALSTON, Oakland Iron-men	" 78
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T. W. PETERSON & Co., Brickmen	" 68
WESTERN IRON WORKS, 123 and 125 Beale St.	" 67
J. BROWELL, Patent Chimneys	" 71
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Brick Wall Disfigurement.

THE extensive use of red bricks which has been made of late years for houses and public building has caused a good deal of attention to be directed to a curious disfigurement to which such structures are liable, in the form of a kind of white mould which is apt to creep over their surfaces. The best of buildings are quite as subject to this detraction from their appearance as the worst, the new Technical College at South Kensington, for instance, being just now covered in places with this objectionable kind of eruption, which is not very generally understood, and for which no remedy has yet been found, we believe, except time. An American paper publishes one or two scientific opinions on the matter, one being that of Dr. Leidy, president of the Academy of Natural Sciences. According to this authority, the white efflorescence is simply ordinary Epsom salts, or sulphate of magnesia, and the production of it on brick surfaces must be regarded as evidence of the presence of sulphurous acid in the air, the result of coal-burning. There is magnesia in the mortar with which the walls are built, and there is sulphurous acid in the air, and in the presence of moisture a chemical combination takes place, the result being sulphate of magnesia. This dissolves in the rain and runs down over the bricks, and evaporation leaves the white deposit. Another chemist agrees that this is the way in which the efflorescence is produced, but thinks that it is potash with which the sulphurous acid combines, and that the white is sulphate of potash, while another authority considers it to be sulphate of lime. All agree, however, that it is the sulphurous acid in the air which causes this disfigurement, and this is really the important aspect of the matter. If this is the effect of atmospheric impurity on brick buildings, it seems reasonable to suppose that it must be somewhat serious in its influence on human lungs.—*Building Times.*

Some of Ruskin's Maxims.

WORK is only done well when it is done with a will; and no man has a thoroughly sound will unless he knows he is doing what he should, and is in his place.

It may be proved with much certainty that God intends no man to live in this world without working; but it seems to me no less evident that he intends every man to be happy in his work.

It is no man's business whether he has genius or not; work he must, whatever he is, but quietly and steadily; and the natural and enforced results of such work will be always the things that God meant him to do, and will be his best.

No book is worth anything which is not worth *much;* nor is it serviceable until it has been read, and re-read, and loved, and loved again, and marked, so that you can refer to the passages you want in it, as a soldier can seize the weapon he needs in an armory.

Building Operations in Yolo County.

ALREADY the sound of the saw and hammer is beginning to be heard—and right merrily, too—in many of the interior counties. Messrs. Gilbert & Son, one of the principal contracting firms of Woodland, have kindly forwarded us a complete list of building operations in their neighborhood. No notice is taken of improvements less in value than $1,000. The number of these would fill the entire pages of this Journal. We intend—from time to time—to give full reports from the principal sections of the State.

Woodland and Vicinity—Main and College Avenue. Additions to three-story brick. O., W. M. Coward; A., W. H. Hamilton; C., W. H. Curson; cost $4,500. Third Street and Oak Avenue. One-story frame. O., G. Lambert; B., Glenn & White; cost $1,200. Main Street. One-story frame. O. and B., G. K. Glenn; cost $2,650. Elm Street. One-story frame. O., H. Shuluck; B., Glenn & White; cost $1,100. Main Street, Odd Fellow's Hall, alterations and improvements. C., G. W. Myrick; cost $1,500. Sprague Avenue. One-story frame. O. and B., Mr. Irwin; cost $2,200. South Fifth. Three-story frame. O., J. T. Wallin; B., Gilbert & Son; cost $3,500. North Street. One-story frame. O. and B., Mr. Anderson; cost $1,300. College Avenue. One-story frame. O., John Jacobs; B., Porter & Sponge; $1,500. College Avenue. One-story frame. O. and B., Broderick Bros; cost $2,800.

West Woodland—One-story frame. O., M. Antone; B., A. Pool; cost $1,200. Third Street. One-story frame. O. and B., M. Wilson; cost $1,000.

East Woodland—One-story frame. O., Armstrong & Akre; cost (days work) $1,100. Second Street. One-story frame. O., Dr. A. Aken; B., J. A. Blake; cost $1,200.

Capay Valley—Two-story frame. O., A. Winters; C., W. H. Winne; cost $3,500. Capay Valley House and stable. O. and B., E. Thomas; cost $1,100.

Davisville—Two-story frame hotel. O., J. T. Lillard; days work, $4,000. Clayton Avenue. One-story frame. O., G. Harris; C., Pool & Sears; cost $1,000.

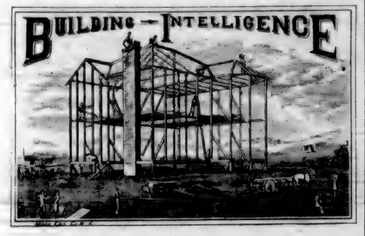
NEW EXCHANGES.

Wood and Iron. A new journal, devoted to those interests represented by its name. Its typographical appearance is very fine, and it promises in its editorial department to equal many of its competitors that are now old in the field of journalistic enterprise. Published by S. L. Everett. **$2.00 per year.**

The Painter. An illustrated monthly devoted to painting and decorating, now in its third year. Typographically, *The Painter* is unusually neat and tasteful. It should be in the hands of every painter. Published at Cleveland, Ohio. **$1.00 per year.**

Every architect in the State should insert his professional card in our columns, and thereby prove that he is endeavoring to assist in building up an architectural journal that will take rank with any printed. The charge is small. We want the influence your names will give, and we promise to spare no efforts in making the "California Architect" fully represent the views of a majority of the Profession on this Coast.

BUILDING — INTELLIGENCE



SAN FRANCISCO.

California, near Larkin. Two-story frame.
O.—W. Coe.
A.—Wolfe & Son.
C.— — Klatt.
$4,500.

Sutter, near Stockton. Additions.
O.—C. A. O. D.
A.—Wolfe & Son.
C.—Hatfield & McRae.
$1,000.

Church, near Twenty-first. Two-story frame.
O. and B.—C. Kleebauer.
$3,000.

Church, near Twenty-second. One-story frame.
O.—T. Shields.
C.—J. P. Shephard.
$2,500.

Twenty-first, near Chattanooga. One-story frame.
O. and B.—F. Buckley.
$1,600.

Hoff Avenue, near Seventeenth. Six French flats.
O. and B.—W. Fletcher.
$10,000.

Mission, near Ninth. Two-story and base frame.
O.—Swedish Evangelical Lutheran Church.
A.—B. E. Henriksen.
Day's work.
$10,000.

Battery, near Pacific. Two-story and basement brick
O.—J. Musto.
A.—W. H. Bayless.
C.—G. Richardson, B. W.
$25,000.

Twentieth, near Noe. Two-story frame.
O. J. Scheerer.
Day's work.
$7,000.

Second Avenue, near Sixteenth. Two-story and basement frame.
O.—Mr. S. Kelley.
C.—W. F. Muller.
$3,400.

Michigan, cor. Sierra. One-story frame.
O.—Toomay & Farrell.
Day's work.
$1,000.

Sixteenth Avenue, near Railroad Avenue. One-story frame.
O.—F. Bonerberg.
Day's work.
$1,000.

Eleventh Avenue, nr P. Four-story frame.
O.—A. W. Norton & Co.
Day's work.
$4,000.

California Avenue, cor Twenty-ninth. One-story frame.
O.—J. Cosgrove.
C.—J. McKeague.
$700.

Guerrero, near Duncan. Two-story frame.
O. and B.—L. Kofoed.
$3,000.

Mission, near Twentieth. One-story frame.
O.—El Capitan Skating Co.
Day's work.
$1,500.

Clinton Park, nr. Dolores. One-story and basement frame.
O.—Mrs. A. Crabb.
C.—F. A. Kern.
$2,500.

Castro, cor. Henry. Two-story frame.
O.—Mr. White.
C.—D. Spangler.
$2,000.

Pacific, cor. Webster. Two-story and basement frame.
O.—C. Roemer.
A.—A. C. Lutgens.
C.—Gray & Stover.
$4,700.

Larkin, cor. Pacific. Three two-story frames.
O.—H. Grimm.
A.—J. T. Kidd.
C.—W. Plum.
$11,500.

California, nr Devisadero. Two-story frame.
O.—W. H. Birch.
A.—S. and J. C. Newsom.
$3,500.

Prospect Avenue, near Webster. Two-story frame.
O.—W. Walker.
A—S. an d J. C. Newsom.
C.—Moore Bros.
$5,000.

Steiner, cor. Sutter. Two-story frame.
O.—J. McMillan.
A.—S. and J. C. Newsom.
C.—J. McKay.
$4,500.

Post, corner Octavia. Two-story and basement.
O.—J. T. Polheim.
A.—B. E. Henriksen.
$12,000.

Oak, near Van Ness. Two two-story frames.
O.—Mr. Merkelbach.
A.—W. H. Bayless.
C.—Patterson & Smith.
$6,150.

Turk, near Franklin. Two-story frame.
O.—J. Wise.
A.—H. Geilfuss.
C.—F. Weinoehl.
$5,000.

Buchanan, cor. Eddy. Four flats.
O.—A. Lndwig.
A.—H. Geilfuss.
C.—B. Dryer.
$10,000.

Fillmore, near McAllister. Two flats.
O.—C. Reimers.
A.—H. Geilfuss.
C.—F. Klatt.
$5,000.

Devisadero, near Geary. Four flats.
O.—C. Ahlborn.
A.—H. Geilfuss.
C.—Christman & Neal.
$10,000.

Everett, near Fourth. Improvements.
O.—F. Hagemann.
A.—H. Geilfuss.
C.—Conrad & Miller.
$3,000.

Folsom, near Fifth. Two-story frame and stable.
O.—J. Buck.
A.—H. Geilfuss.
C.—H. Meyn.
$5,000.

O'Farrell, cor. Buchanan. Six two-story frames.
O.—H. Rothehild.
A.—Schmidt & Havens.
C.—I N. and J. G. Day.
$18,500.

Golden Gate Avenue, near Broderick. Two-story frame.
O.—R. S. Alexander.
A.—Schmidt & Havens.
C.—C. Chisholm.
$4,500.

Polk, cor. Fulton. Three two-story frames.
O.—K. Meussdorffer.
A.—Schmidt & Havens.
C.—T. C. Ridell.
$18,000.

Mission, near Main. Three-story frame.
O.—F. C. Peters.
A.—Schmidt & Havens.
C.—Mahoney Bros.
$11,000.

Grove, near Van Ness. Two three-story frames.
O.—F. Siefke.
A.—Schmidt & Havens.
C.—R. Smilie.
$11,000.

Eddy, near Franklin. Two-story frame.
O.—N. Goldtree.
A.—Schmidt & Havens.
C.—C. Quinn.
$7,500.

Scott, near Haight. One-story frame.
O.—H. Kennan.
A.—John J. Clark.
Day's work.
$1,900.

Broadway, near Laguna. Two two-story frames.
O.—Elizabeth Nelson.
A.—W. P. Moore.
C.—W. Langstaff.
$7,500.

Turk, cor. Leavenworth. twenty-eight stores and tenements.
O.—W. E. Dean.
A.—W. P. Moore.
C.—C. B. Green.
$3,500.

Olive Avenue, cor. Ellis. Alterations.
O.—T. Donahue.
A.—H. D. Mitchell
Day's work.
$2,000.

Waller, near Buchanan. Alterations.
O. and B.—R. McCann.
A.—H. D. Mitchell.
$3,5000.

Montgomery, near Jackson. Alterations.
O.—H. Pierce.
C.—A. Flood.
$7,000.

Tenth, near Mission. Three-story frame
O.—P. Scanlon.
A.—T. J. Welsh.
C.—J. Blake.
$12,000.

Valencia, near Eighteenth. Stores and flats.
O.—M. Maguire.
A.—T. J. Welsh.
C.—Rebman & Cummings.
$8,000.

Golden Gate Avenue, near Franklin. Three-story flats.
O.—T. Delany.
A.—T. J. Welsh.
C.—B. Dryer.
$6,700.

Steiner, cor. Sutter. Additions.
O.—R. Sbarboro.
A.—T. J. Welsh.
C.—R. Doyle.
$3,500.

Sanchez, near Seventeenth. One-story frame.
O.—B. Flood.
A.—T. J. Welsh.
C.—T. Darcy.
$1,800.

Brannan, near Third. Improvements.
O.—Lusk & Co.
$15,000.

Clinton Park. Two-story frame.
O.— — Spaulding.
$3,200.

East, near Market. Frame Building.
O.—T. D. Riley.
$2,500.

Twenty-first, near Clement. Frame dwelling.
O.— — Patten.
$2,000.

First, near Market. Five-story brick.
O.— — Huntington, Hopkins & Co.
A.—A. Laver,
Mason—Geo. D. Nagle.
Carp.—P. Crichton.
$100,000.

Market, near Seventh. Improvements. Brick.
O.—Gladding, McBean & Co.
Day's work
$3,500.

Mission, near Eleventh. Additions.
O.— — Fredericks.
$1,000.

SACRAMENTO.

Second, x I and J. One-story and basement brick.
O.—Green & Trainor.
A.—N. D Goodell.
C.—Carle & Croly.
$10,000.

Seventh, x H and I. One-story and basement frame.
O.—N. D. Goodell.
A.—N. D. Goodell.
C.—Carle & Croly.
$4,500.

Fifth, x J and K. Additions.
O.—Jos. Guth.
A.—N. D. Goodell.
C.—M. Madden.
$3,400.

Ninth, x P and Q. Ice house.
O.—F. C. Knauer.
A.—N. D. Goodell.
C.—J. P. McGinnis.
$2,400.

K, Nos. 209 and 219. Additions.
O.—W. Land.
A.—A. A. Cook.
Day's work.
$1,000.

Nineteenth, cor. L. One-story building.
O.—acramento City.
A.—A. A. Cook.
C.—W. H. Sutherland.
$1,750.

K, No. 318. Additions.
O.—J. W. Wilson.
A.—A. A. Cook.
C.—Hook & Son.
$700.

Eighth, x E and F. One-story and basement frame.
O.—P. Davis.
C.—D. and D. Falconer.
$2,500.

Fourteenth, cor. H. Two-story and basement frame.
O.—A. A. Van Voorhies.
A.—J. Seadler.
C.—D. and D. Falconer.
$14,190.

MISCELLANEOUS.

San Jose—Third, near Empire. One-story cottage. O., F. S. Montgomery; A., Theo. Lenzen; C., W. B. Mitchell; $1,400. Market, cor. Colfax. One-story cottage. O., L. Rothermel; A., Theo. Lenzen; C., Thos. Clark; $4,000.

San Rafael—Depot for S. F. & N. P. R. R. O., P. Donahue; A., Theo. Lenzen; day's work; $15,000.

Santa Rosa—One-story brick. O., G. E. Grosse; C., T. J. Ludwig; $3,500.

Hemacite Knobs.

THE Gordon Hardware Co. have now a large assortment of these knobs on hand. For interior work they are superior in design to any knobs in the market. They are fully guaranteed for strength and durability. Those wishing an illustrated catalogue can secure one by addressing the above firm, or the manufacturers, the Dibblee Manufacturing Co., Trenton, N. J.

PROPOSALS FOR THE CONSTRUCTION
OF THE
New Odd Fellows' Hall.

SEALED BIDS WILL BE RECEIVED AT THE OFFICE OF The Odd Fellows' Hall Association of San Francisco, Room No. 1, Odd Fellows' Hall, No. 325 Montgomery street, San Francisco, up to and until 12 o'clock M., of

FEBRUARY TWENTY-SEVENTH, 1884,

For the erection of the New Odd Fellows' Hall, on the lot on the southwest corner of Market and Seventh streets. Bids to be received for the separate trades, as follows:

No. 1—Brickwork.
No. 2—Carpenters' and Joiners' Work.
No. 3—Granite and Freestone Work.
No. 4—Cast Iron Work.
No. 5—Wrought Iron Work.
No. 6—Tin and Platers' Work.
No. 7—Plumbers' and Gasfitters' Work.
No. 8—Plasterers' Work.
No. 9—Painters' and Glaziers' Work.

The plans and Specifications of said building can be seen at the office of Messrs. Wright & Sanders, No. 418 California street, and will there be open to public inspection after the date hereof.

The successful bidders will be required to furnish bonds, satisfactory to the Board of Directors, for the faithful completion of the work in accordance with the plans and specifications. The Board of Directors reserve the right to reject any or all bids.

C. T. PIDWELL, Secretary
of the above-named Association.

San Francisco, January 25, 1884.

MARKET REPORTS.

LUMBER—*Pine.*

Common Rough, up to 40 feet, per M feet			$22 50
"	41 to 50	" "	23 50
"	51 to 60	" "	24 50
"	61 to 70	" "	26 50
"	71 to 80	" "	28 50
Refuse Rough			18 50
Common Rough, sized with planer $2 additional on above rates, per M feet.			
No. 1 Flooring, 6 inches and over,		"	33 50
" 4 " and under, and 1¼x4 and 1¼x6			
Flooring and Stepping			40 00
Rough Clear for Flooring, $1 less than above rates.			
Second Quality Flooring and Stepping		per M feet	28 50
Ship Plank, Rough		"	28 50
" " Planed 1 side		"	32 50
" " 2 sides		"	35 00
Deck Plank, Rough		"	33 50
" Dressed		"	37 50
Laths		per M	3 75
Wool Slats		"	10 00
Shakes		"	12 00
Redwood Posts		per piece	17 50

Redwood.

Rough Merchantable	per M feet	$22 50
" Refuse	"	18 50
Surface No. 1	"	40 00
" 1x6	"	37 50
" No. 2	"	27 50
Rustic, No. 1, 1x8	"	37 50
" No. 1, 1x10	"	40 00
" No. 2	"	35 00
" Under 10 feet	"	35 00
T. & G., 1¼x4 and 1¼x6	"	40 00
" 6 in. 12 ft. and over	"	37 50
" " 7 to 11 feet	"	32 50
" " under 7 feet	"	30 00
" " No. 2	"	30 00
T. & G., Beaded, 12 feet and over	"	40 00
" " 7 to 11 feet	"	32 50
" " under 7 feet	"	30 00
Half-inch Surface	"	32 50
Pickets, fancy	"	30 00
" Rough, Pointed	"	20 00
" " Square	"	17 50
Siding, ½ inch	"	27 50
Shingles	per M	2 15
Battens, ½ inch, lineal feet	"	1c

NAILS.

10 d to 60 d		$3.25
8 d cut ore Extra per keg (over standard)		.25
6 d " " " " "		.50
4 d and 5 d " " " "		.75
3 d " " " "		1.50
10 d to 20 d Brad, h'd' " "		1.50
8 d " " " "		1.50
6 d " " " "		1.50
4 d and 5 d " " " "		1.75

THE brickmakers of this country last year consumed three million cords of wood, the product of fifty thousand acres of average timber land. A large part of this immense expense could have been saved, with a proportionate increase in the profits, by the use of improved methods in firing.

The California Architect and Building News.

VOLUME V.
NUMBER 4.

SAN FRANCISCO, APRIL, 1884.

$2.00 per Annum, in Advance.
Single Copies, 20 Cents.

THE
California Architect
AND
BUILDING NEWS
Published on the 15th of each month
BY THE
San Francisco Architectural Publishing Co.

JAMES E. WOLFE, GEO. H. WOLFE,
EDITORS AND MANAGERS.
Rooms 11, 12, 13, No. 240 Montgomery Street.

TERMS:
PER ANNUM $2.00 IN ADVANCE

ENTERED AT POST-OFFICE AS SECOND CLASS MATTER.

OUR COMPETITION PLANS.

This will be the last notice sent to those desiring to compete for the prizes offered by the Proprietors of this Journal.

All designs and plans must be at this office on or before May 1, 1884.

Those received by that date will be presented before the Committee of the S. F. Chapter at the regular monthly meeting on May 2d. Each and every contestant will be notified of the decision of the Committee as soon as possible after the awards are made.

Particular notice is given to those residing out of this State to send their plans so as to reach this office by the time specified.

Building Improvements.

THE GENERAL OUTLOOK IN THE STATE.

THE indications point strongly to extensive building operations in all sections of the State.

One of the surest signs of a most prosperous and busy season is the

ACTIVE DEMAND FOR DRAUGHTSMEN:

That has lately sprung up from different sections of the country. From the extreme southern portion of our State telegrams have been received by us for first-class draughtsmen. After diligent inquiry, we have failed to find good men who were willing to accept the situations, although from $80.00 to $100 per month was offered, and steady work guaranteed.

The effect of the late storms has been the circulation of an immense amount of money through the southern section of the State. It is calculated that over one million of dollars will be expended in repairing damages. This large sum and that received from the assured large crop, will cause very extensive operations in building and mechanical lines.

Los Angeles leads all the counties in the number and value of buildings erected, followed very closely, however, by Alameda County. In the former county, numerous towns are springing into existence, offering superior inducements to young men to migrate into neighborhoods where muscle combined with head work, properly exercised, will lay the foundation of a prosperous future.

Fresno and Tulare have been asleep for a while, but when harvest time comes along no doubt they will regain their former business prosperity.

The counties bordering on the bay are all sharing a large degree of prosperity, and, from present indications, large improvements will be carried out during the year.

Sonoma, Napa, and Marin,—thanks to an energetic race of inhabitants, stand very prominent in the list of go-ahead counties More work is now being talked of than there are mechanics numerous enough to meet the labor demands.

The counties north of Sacramento are awakening from their sleep, caused by a partial failure of crops last season, and each and every one will be heard from when the time of the saw and the hammer begins.

IN THIS CITY

Never were indications for a grand building season more pronounced than they are at the present time. Up to the 10th of April buildings and improvements of the value of

OVER TWO MILLION DOLLARS

Have been commenced. This is greater than the entire amount for the whole year of 1880.

We sincerely hope that the prospective activities will not be checked by increase in the prices of building materials, or excessive demands by mechanics for high wages. It is far better and wiser that the prices of material and rates of wages should be steady and reasonable, and a fair degree of business continuous, rather than a rush for short periods, followed by dullness and inactivity during a considerable portion of the year.

San Francisco Chapter American Institute of Architects.

THE regular monthly meeting of the Chapter was held on Friday eve, April 4, 1884. President John Wright presided. Committee appointed to procure a Seal for the Chapter, reported that they had attended to their duties, and now had the pleasure of presenting the Seal to the Chapter. A short recess taken to allow the members to inspect the same.

Upon motion it was resolved that the *design* of the Seal be accepted. This motion was carried, with the understanding that the committee have two weeks further time, in order that improvements could be made by the engraver in portions of the dies.

The committee were also requested to place the Seal in the hands of the committee on incorporating the Chapter, by the time agreed upon, so that at the next regular meeting the incorporation of the Chapter may be a settled fact.

The collector appointed by the Chapter, on motion, was allowed 10 per cent. on all collections.

Committee on preparing articles of indenture for students was granted further time.

The committee upon the applications of members proposed at previous meeting was allowed till next regular meeting to make their report.

Proposition for membership was received from J. J. Clark, and referred to Messrs. Sanders, Wolfe, Jr., and Pissis.

Committee on the different classes report favorable progress by pupils. Adjourned.

Be Sure That Your Figurations Are Correct

THAT which is of first importance to contractors and those estimating the cost and value of material and labor required in the erection of buildings, etc., is correct figuring. Every mistaken figure below true value is a direct loss in the amount represented by the figures in error. Hence the importance of men understanding how to figure, the value of figures, and the most perfect method of using them. Sometimes errors result from absolute or imperfect knowledge of the science of figures and figurations; sometimes from failure to comprehend the extent and magnitude of the thing estimated upon; sometimes a spirit of recklessness and disregard of the involvments, a don't-careativeness as to the results, a chance-taking disposition and frame of mind, which, if it happens to settle down upon a safe conclusion, does so from sheer "it happened so;" and some are thoughtless, desiring and aiming to be right, but, from lack of mental energies and fixedness of thought, fail to take in and deliberate upon all the matters of cost, and so fail to be near right.

It seldom happens that where ten more or less competent contractors estimate upon a building or works of any kind, that very great incompetency and lack of mechanical intelligence and right understanding, or something less creditable, are not illustrated, in perhaps five out of ten being inconsistently high; perhaps three, more or less, below a correct amount, and one or two at a sum fairly and reasonably remunerative. It is no strange matter to find from ten to one hundred per cent. difference in ten bids. Sometimes the estimates will run together, except it may be the very low man or two who have failed to add in all the items of cost. But the more general rule is great differences in amounts.

The effect of all this is injurious to contractors, as intelligent owners do not generally take in the situation and recognize results from the contractors standpoints, but reasonably set it down to questionable intent or want of proper knowledge. We say reasonably, for when ten or five men, recognized, practical contractors, submit estimates running from the low man, say at $4,500, and the high man, $7,500, or, as in one case in our office, the low man being less than $40,000, and the high man, $60,000, argues decidedly unfavorably to those who make such discrepancies; yet it is not always the case that the low man is loser by his undertaking; sometimes he is, and many hundreds of thousands of dollars have been lost to material, men, and others, from this cause, but we have good, faithful men who have run through years of contracting without failure, and have something to show for their labors, who have worked almost continuously upon contracts taken as the lowest bidder.

Every foot or pound of material, and every hour of labor, according to quality and kind, possesses a standard value, furnishing, to those using them, all the requisite elements to correct conclusions; so that when more than reasonable differences occur, the presumption is sustained that there has has been a lack of good judgment, or a superabundance of carelessness, or ignorance indulged in.

For, with the defined basis of calculation, such as exists in the market, and purchasable value of materials, and the well-understood cost of labor to quantity of materials required, there is but a small right margin for variations in total costs, when handled by intelligent and competent parties.

Eastern Comments On Our Bone Yard Article.

THE *American Lumberman*, in commenting favorably upon our "Bone Yard" article which appeared in the February number of this journal, remarks: "At this distance it is hard to judge correctly of the condition of the lumber trade in San Francisco; but it does seem that with a tariff of only $2.00 per 1,000 feet on lumber, the manufacturers on the Canadian side of Puget Sound, ought to be able to sell lumber at a profit, if the scale of prices fixed by the Association are as outrageously high as stated by the ARCHITECT."

True—"distance" does render it difficult for parties who have never visited, nor been able to inform themselves by personal observations as to the lumber market of San Francisco, and the manufacture of lumber at Puget Sound, to rightly understand the peculiarities of the situation. And when inside facts are revealed by publications, as in the matter in question, they appear so different in character from the more usual and better regulated markets of the country, that even those engaged in little business in other cities and places cannot readily comprehend the actual facts as they exist.

As to the suggestion of our cotemporary, in reference to the tariff of "only $2.00," it is correct, provided there could be any assurance to British Puget Sound manufacturers, that present prices, and the prices ruling for the past two years, could be maintained.

But the fact that American manufacturers hold the key to the lumber market of this coast, and have it in their power to control and regulate the prices under a united and firm combination, it would be consummate folly for any one to risk the uncertainties; for just as soon as a competitive supply of imported lumber should be placed on the market, our wide awake combination men would tumble the prices to ruinous rates—unless they could house the competition—and the imported material would have to be sold at a loss.

This fact is so well understood that men with capital, seeking investment, give the matter no serious consideration, because the field is too treacherous. We can at any moment control $1,000,000 for investment in lumber mill operations on the British side of Puget Sound, if there were any reasonably fair show of a steady market for lumber at present prices for even five years.

But the chances are all the other way. It was only in 1877-78, that the very men who now hold control of the market by combination, were in merciless competition among themselves, and the same lumber, Oregon pine, that is now retailing at $22.50, sold retail then at and for less than $12.00 per thousand feet; at which price, however, there was but bare salvation from ruin generally, while a few were crippled, and some compelled to surrender under the then too severe pressure. But when prices recovered to $14.00, $15.00, $16.00 a feeling of safety pervaded the lumber market, and manufacturers and dealers felt that they had reached safe ground.

Under this state of facts our contemporary may easily see the difficulties of competition by lumber taxed with a tariff of only $2.00, for the general building of the coast, being altogether of wood, the amount of lumber required to supply demands is large, and the American manufacturer could comfortably afford to sell at a profit of $2.00 per thousand until British competitors tired of selling at actual cost of production with $2.00 tariff added.

Pioneer Hall Competition.

NAMES OF CONTESTANTS.

Below will be found a correct list of the names of the Architec's presenting plans for the proposed Pioneer Building. We withhold comments until after the award shall have been made.

PERCY & HAMILTON,
WRIGHT & SANDERS,
MCDOUGAL & SON,
A. LAVER,
HOFFMANN & O'CONNOR,
W. PATTON,
LEUDERS & WILSON,
E. A. HATHERTON,
W. SCHROF,
T. D. NEWSON.

SHARP-CORNERED DRAWING TOOLS.—A sensible correspondent of the *American Machinist* very justly complains that "manufacturers of drawing instruments make them so full of little sharp corners, and interior angles," and suggests that they be made "of round or oval cross sections, with no places where dirt can collect." The trouble is that makers of drawing tools very seldom, if ever, have any practical experience in the use of such instruments, and are unknown to those who have.—*Mining and Scientific Press.*

GILDED FRAMES.—To restore gilding to picture frames, etc., remove all the dust with a soft brush, and wash the gilding in warm water, in which an onion has been boiled; dry quickly with soft rags.

Compiled Items of Interest for Mechanics.

THE weight of a crowd of men closely packed is estimated at 84 lbs. per superficial foot.

Street, Store and Bank Fronts $4.00

IT is thought by many that a girder—say 12x16—will bear more weight if it is ripped through the middle, making two pieces 6x16, and these two be reversed and bolted together again. This is an erroneous conclusion. The only advantage gained is, that, by the process given, an opportunity is presented to examine the center of the timber, which, in large pieces, is often in a state of decay; also, it gives the timber a better opportunity to become seasoned, and thus less liable to rot.

Cottages and Villas $6.00

TIMBER when wet has only about half the strength of the same timber when perfectly seasoned.

Builder's Guide $2.00

DOUBLE tenons are often used in Joinery, but should be avoided in Carpentry, as they weaken the timber into which they are framed; both tenons seldom bear equally, so that a greater strain is thrown upon one of them than it is intended to support.

Modern Perspective $6.00

EVERY mechanic should be able to cut and frame all timbers, rafters, etc., upon trusses on the ground. Many, however, have not studied the rules of Carpentry sufficiently to be able so to do. To such we would say that it will greatly benefit you to secure a copy of "Mechanic's Geometry, or The Science of Framing by the Aid of Card Board Models." This eminently practical work—if properly studied, and the principles put into practical use, will enable a mechanic to frame any portion of a building with ease and exactness. But few copies can now be had of this work, as the edition is exhausted. Sent to any address upon receipt of $5.00.

Wooden and Brick Buildings $18.00

EDITORS ARCHITECT: In a bill of lumber, lately received, I find the item—72 pieces 2x6 for *Raglins*. Please inform me of the meaning of the term *Raglins*.

LUMBER DEALER.

Your customer is evidently a newcomer. *Raglins* is a term used in England for ceiling joist.

The Artisan $5.00

ONE of the most practical works for the mechanic to have in his possession is "The Science of Carpentry Made Easy." A copy will be forwarded to any address upon receipt of $5.00.

Universal Assistant $2.50

A SCHOOL-TEACHER asks for a simple method of preventing reverberations in a school-room. Instead of the ordinary smooth plaster finish for the walls and ceilings, have the same rough finished. Curtains may be used for the windows instead of blinds. Large maps hung around the room, aside from being ornamental, are very useful as anti-reverberators.

Church Architecture $4.00

IN many journals different measurements are given in *meters*. Mechanics can easily compute the same in *feet* by allowing 39⅜ inches to a *meter*.

Plaster, how to make it $1.00

FIVE pounds of nails are required for 1,000 shingles, when laid 4 inches to the weather.

Buck's Practical Designs 50c

BOUND volumes of this Journal are becoming scarce, and those that desire the same should immediately forward $2.50, for which a copy will be sent to any address.

Practical Carpentry $1.00

WOOD screws vary in size from one-sixteenth to three-eighths of an inch in diameter, and in length from one-fourth to three and a half inches, including twenty-three numbers, as follows:—

Length.	Number.	Length.	Number.
¼	0 to 2	1⅛	9 to 18
⅜	2 " 7	1¼	10 " 20
½	2 " 9	2	11 " 20
⅝	3 " 10	2¼	11 " 20
¾	4 " 12	2½	14 " 20
⅞	6 " 12	2¾	16 " 20
1	7 " 14	3	15 " 20
1¼	8 " 16	3½	18 " 22

Number 11 is about three-sixteenths, and Number 14 about one-fourth of an inch in diameter, and are sizes in very common use.

IT requires 123 sheets of tin 10x14 to cover one square, and 59 sheets 14x20 to cover same space.

Cummings' Architectural Details $6.00

A HANDY thing to have on a farm is a measuring cord with which to measure off acres. To make one, procure sixty-seven feet of strong rope, one inch round, make a loop or fasten a ring or bar at each end, and make these exactly sixty-five feet apart. This is four rods. Then tie a piece of red rag in the center. One acre of ground will be a piece four of the cords (chains) long, and two and one-half wide, equal to sixteen by ten rods, making one hundred and sixty square rods to the acre. The advantage of the ring or loop is that one person can measure alone by driving a stake in the ground to hold the rope while he stretches it out. The rope should be soaked in tar and dried, which will prevent its shrinking when wet.

Steel Square and its Uses $1.00

Bancroft's Histories.

THIS magnificent work embraces a complete history of the Pacific States. The territory covered is the western half of North America, from Panama to Alaska, including all of Central America and Mexico, and is equivalent in area to one-twelfth of the earth's surface.

There are to be thirty-nine octavo volumes, with maps and illustrations, fifteen of which are now ready. They will be well printed on good paper, neatly and substantially bound, uniform in style, and will average over 700 pages each. Three or four new volumes per annum will appear until the entire series is completed. Subscribers will not be obliged to take the work unless it corresponds with the description in every particular.

	Per Volume.
Bound in Extra, English Cloth, neat and attractive style	$4.50
Bound in fine leather, Library Style	5.50
Bound in half calf, half Russia or half Morocco	8.00
Bound in Russia Leather or Tree Calf	10.00

Any information in regard to the above will be given by addressing the office of this Journal.

New York Letter.

BY A. CURTIS BOND.

It is a difficult task to undertake the study of American architecture, difficult, because it leads to no satisfactory result. Here, architectural art, like every other matter that is regarded from a business view, is developed under a strictly speculative influence, and "time" is accepted as one of the appreciative qualities. Human activity is a powerful factor in the appreciation of human works.

Nor does this unfortunate artistic condition appear to be easily remedied, or even susceptible of future correction, for the rapidity of our life, and, consequently, of the execution of our designs, makes it impossible, even for the coldest and most analytic talent from foreign countries, to resist the tendencies of our climate, and avoid cultivating the same disposition himself. This second atmosphere of our country at first stifles the new-comer, and he pities the disposition to "rush things," but as he meets others more, and finds that he is falling behind in the race, he bestirs himself, and, before he becomes conscious of the influence, he is measuring time in his labors, and falls into the true American scheme, of making a *melange* of everything and allowing it to take the place of a creation.

Yet this failing of our architectural art must not be accepted as a general condemnation, for we admit all the very best examples of foreign work with this indiscriminate adaptation and a Greek, Moresque, and Persian form may be found as next door neighbors in our streets and squares. It serves to enliven and diversify the city, and furnishes subjects for visiting foreigners to return to their homes and write about, and against. New York may be accepted as the type of American cities, I presume, yet there is a greater variety of architecture here than elsewhere over the continent. The peculiarity of which I have spoken is shown here in a marked degree.

This disposition, however, to utilize all the old styles, and combine oddities into one building, has had another good effect in giving us very many peculiar and decided original structures, picturesque in the extreme and interesting to study.

One building recently put up has the heads of the architect, the builder, the owner, and a variety of other persons interested, more or less, in its completion, arranged at various points, on the gable, from the tops of the windows, at the end of the waste pipes, from the roof, and in several other places equally inappropriate, and equally conspicuous. Another building imitates the Bastile, and is reduced to the humble purposes of a storage house. A new residence is an excellent reproduction of a baronial castle, on a small scale, with a moat, portcullis, and watch-tower, sentry box, and all. Another still, the house of a prominent physician, is a rambling, low, Queen Anne structure, full of odd and queer corners, a marvelous quantity of stained glass, and a multitude of picturesque chimneys.

One of the growing men of our Eastern States, one who is so young, and so well known as to warrant the belief that he will make himself more widely felt, as he increases in age and in experience, is Mayor Seth Low, of Brooklyn, just re-elected to another term of office, and at the same time reached his thirtieth birthday.

Mr. Low has a great deal of originality, and has shown it in the house that he has put up, or rather reconstructed from a small and dilapidated cottage. The style of the building is the Queen Anne, of red brick, with terra cotta trimmings, a color and combination that is rather marked, amid the surroundings of substantial brown stone. The stoop is of large, manufactured stone slabs, and on either side grass plots laid out, in goodly sized squares, and unprotected save by a simple sub-base of stone. The pillars and roof of the entrance are of a dark green, carved wood, and the vestibule of variegated marble, and the door of light, polished oak. A bay window on the side (the house is upon a corner), has for ornament an enormous square waste pipe, leading from the roof and which branches off into two at the roof of the bay window, coming down then upon either side to the ground. This pipe is a capital imitation of terra cotta, and is probably the first really successful attempt to make such a thing as this decorative.

An oddity, in every sense of the word, is being put up at Coney Island. Ever since Barnum brought Jumbo to the country, that interesting animal has been counterfeited in every conceivable manner, and the designation for the stupendous of every sort was the word Jumbo. Finally this craze has extended to building, and now they are putting up, at Coney Island, a restaurant, dancing hall, and the usual accompaniments, to be contained in a structure shaped like an elephant, the legs to be spiral stairs, the head a music room, and the body to be divided into the restaurant and the ball room. The height of the animal is to be eighty feet, and the length, one hundred and twenty-five. If this scheme is enlarged upon, and the white elephant which is expected from Europe daily, should be found worthy of a similar monument, and when it extends to other animals in the show, it may entirely change the architectural aspect of our watering-places, and they may put on the appearance of monstrous out-door menageries, gatherings of the creatures that populated the world before the flood.

* * * * * * *

The illustration that I have chosen this month is that of a country house, of a conglomerate style, somewhat on the principle of those I have criticised. It is neat and attractive in appearance, and designed for an economical and substantial-looking place. The arrangement of the rooms will commend itself, I think, to the architect and to the private party; it shows the kitchen department kept apart from the living rooms and entirely distinct in its situation and exclusiveness.

A Substitute for Wire Screens.

Every house-wife and servant fully understands by practical experience, the desirableness of a means by which kitchens, dining and other rooms may be ventilated, particularly during the summer months and warm days of the year, without being "tormented" by the presence of flies, mosquitoes, etc. This has usually been accomplished by means of wire screens on frames, or at the heads of the upper sash. A very simple and seemingly practical device, which does away with the metallic wire cloth, may be seen at W. Little's place of business, No. 128 Geary Street.

They can be applied to any window at small cost, and should command the special attention of families residing in districts where the heat of summer becomes oppressive, and to all who desire freedom from the presence of those winged intruders who never fail to swarm the apartments appointed for cooking and eating purposes.

The New Odd Fellows' Hall.

At the southwest corner of Market and 7th Streets, work has been commenced upon the foundations of a structure, the erection of which is destined to have a marked effect upon the values of surrounding property.

It has been a mooted question in regard to the building under consideration, upon the advisability of erecting an edifice of such magnitude, so far from the present location of the Order which it represents. Careful study has been given to the subject, and, wisely we think, the decision has been rendered in favor of the location adopted.

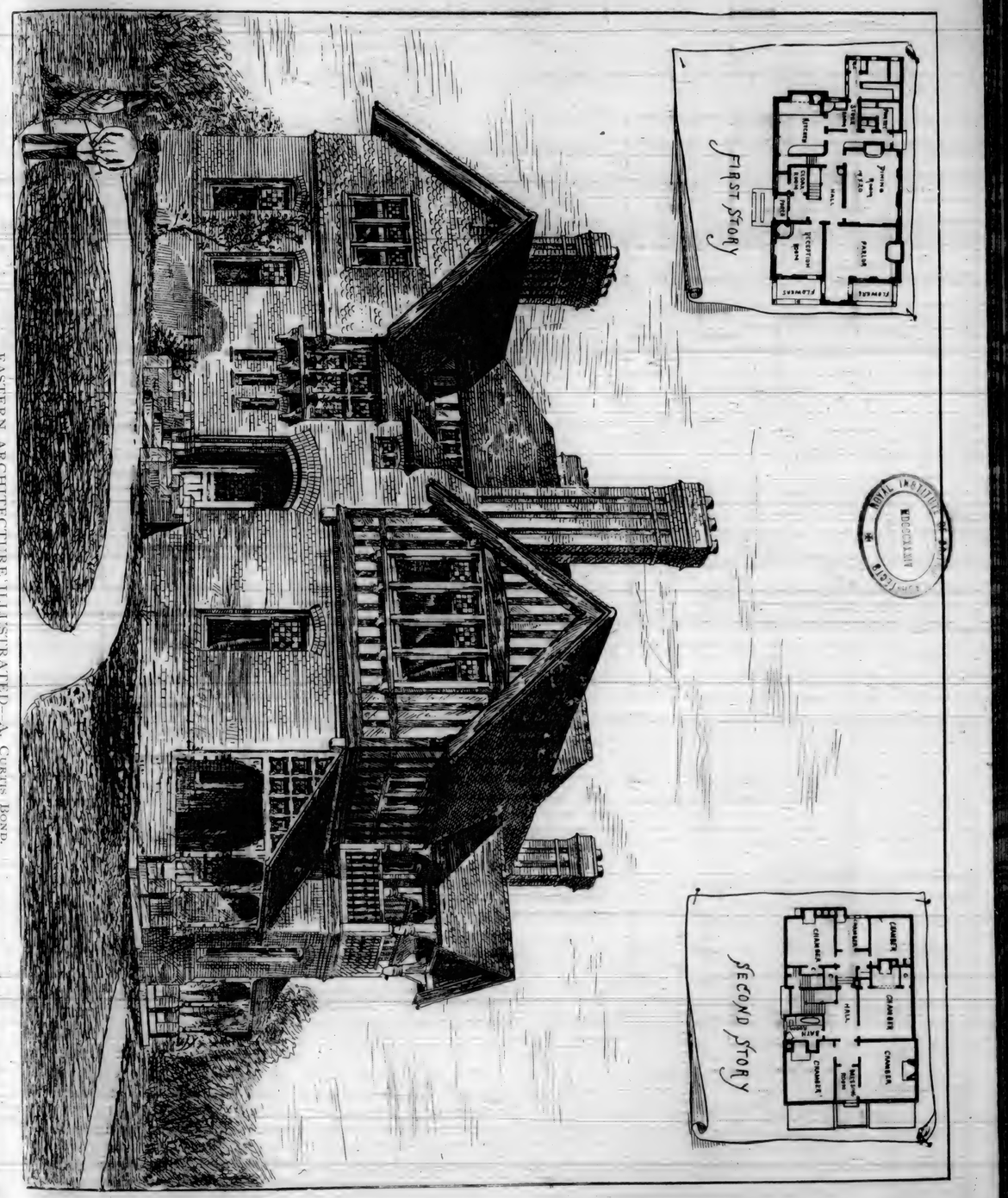
Property in the immediate neighborhood is mostly owned by men capable of making substantial improvements, and now that work has been commenced in earnest, it may be expected that, in the near future, other improvements will be commenced, and that the vicinity of the City Hall will shortly become a prosperous business center.

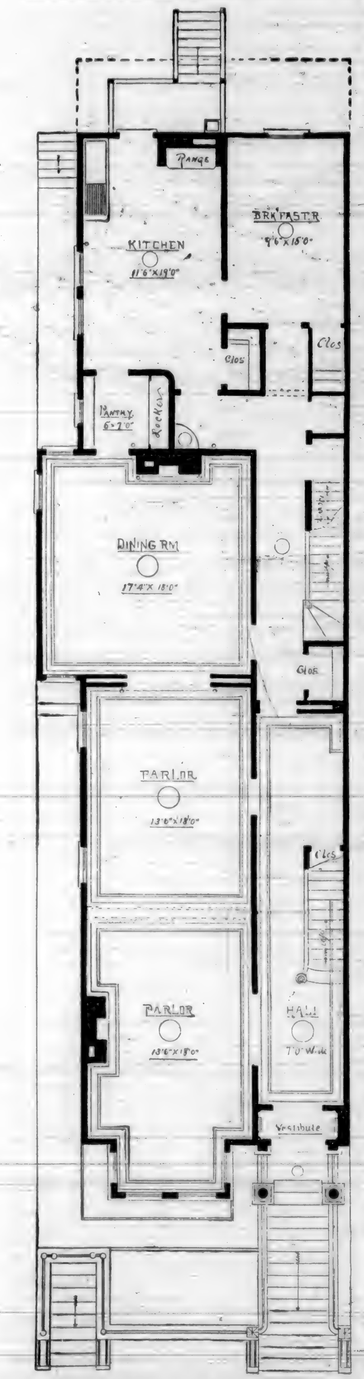
We hope to see property owners adopt designs in keeping with the character of the new I. O. O. F. building, and that contemplated by Murphy, Grant & Co., a short distance below the above site.

We hope to be able in the future to present full illustrations of the building. The Architects are Messrs. Wright & Sanders. The various contracts were awarded as follows:—

Brick work,	J. G. Liebert,
Carpenter,	Ed. Farrell,
Cast Iron,	R. Llewellyn,
Wrought Iron,	Phœnix Iron Works,
Roofing,	Cronin & Dunbar,
Plumbing,	Geo. Milne,
Plastering,	A. C. Corbett,
Painting,	E. M. Gallagher,
Granite,	Geo. Griffith,
Cement,	Davis & Cowell.

The estimated cost of the structure complete will be in the neighborhood of $300,000.





FIRST FLOOR PLAN OF $10,000 RESIDENCE.

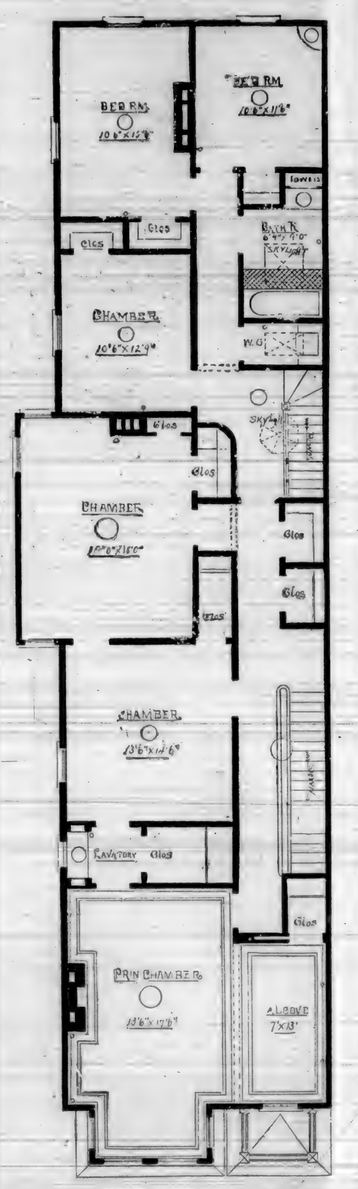
Custom Versus Specifications.

THERE can be nothing more provoking to a competent and upright architect, than, upon visiting buildings and works intrusted to him, to find portions of the work done in direct violation of the requirements of his specifications, and when attention is directed to the error, to be answered, "It is customary to do it so," "It is according to custom," etc. We have often regretted that we did not possess the muscle of a champion slogger, so that we might be able to thump consistency into such men, or throw them out of or clear over the building. It is nothing less than a deliberate insult to an architect to set aside the papers prepared by him, papers which, if the work of a competent man, are the result of careful thought and deliberation, expressing exactly what is wanted in kind and quality, and the mixture of impertinence and disrespect which will embolden parties to such a course is next to unbearable.

Who, we ask, is the leader in architectural fashions in house building? Who is the recognized man who issues this fiat of custom, and bids all to yield to his notions as to how this or that shall be? From whence comes "custom," "customary," "usual way," etc.? We denounce in emphatic terms all such absurdities, either upon the part of contractors, mill men, material men, or others, as far as intelligent architects, who understand and express in their specifications what they want—are concerned. It may serve a purpose among that class of architectural frauds, in San Francisco, who know nothing rightly about building houses; but it is an imposition upon decent men in the profession, to subject them to the necessity of even repudiating things done "according to custom," not in conformity with specifications. We know that there are architectural dudes, dunces, and shysters practicing the profession on this coast, and that they may be played with by any shrewd mechanic or contractor; but that fact does not justify attempts in the same direction upon men worthy the name of architects.

Personally, and for a majority of the gentlemen in the profession, we say to all parties performing contracts under our superintendence, we acknowledge no right in any one to change one iota from the requirements of our plans and specifications, and those who chance the substitution of "custom" for the plain language of plans and specifications, do so at the risk of rejection of the substitution, and the strict enforcements of the written requirements of the documents.

DID it ever occur to you how useful your thumb is? If it never has, supposing you tie it up a little while and see how helpless your fingers will be alone. We often say when anybody is particularly clumsy, that his fingers are all thumbs. This is simply slander on the hardest-worked and most useful of our five fingers.



SECOND FLOOR PLAN OF $10,000 RESIDENCE.

THE influence of Japan is beginning to be felt very considerably in architecture. Some things in Japanese architecture we shall, of course, probably never introduce—the heavy roof, for instance—but for verandas of country houses, for screens and for interior decorations, Japanese art and architecture is rapidly coming into use.

Unintelligent Estimating.

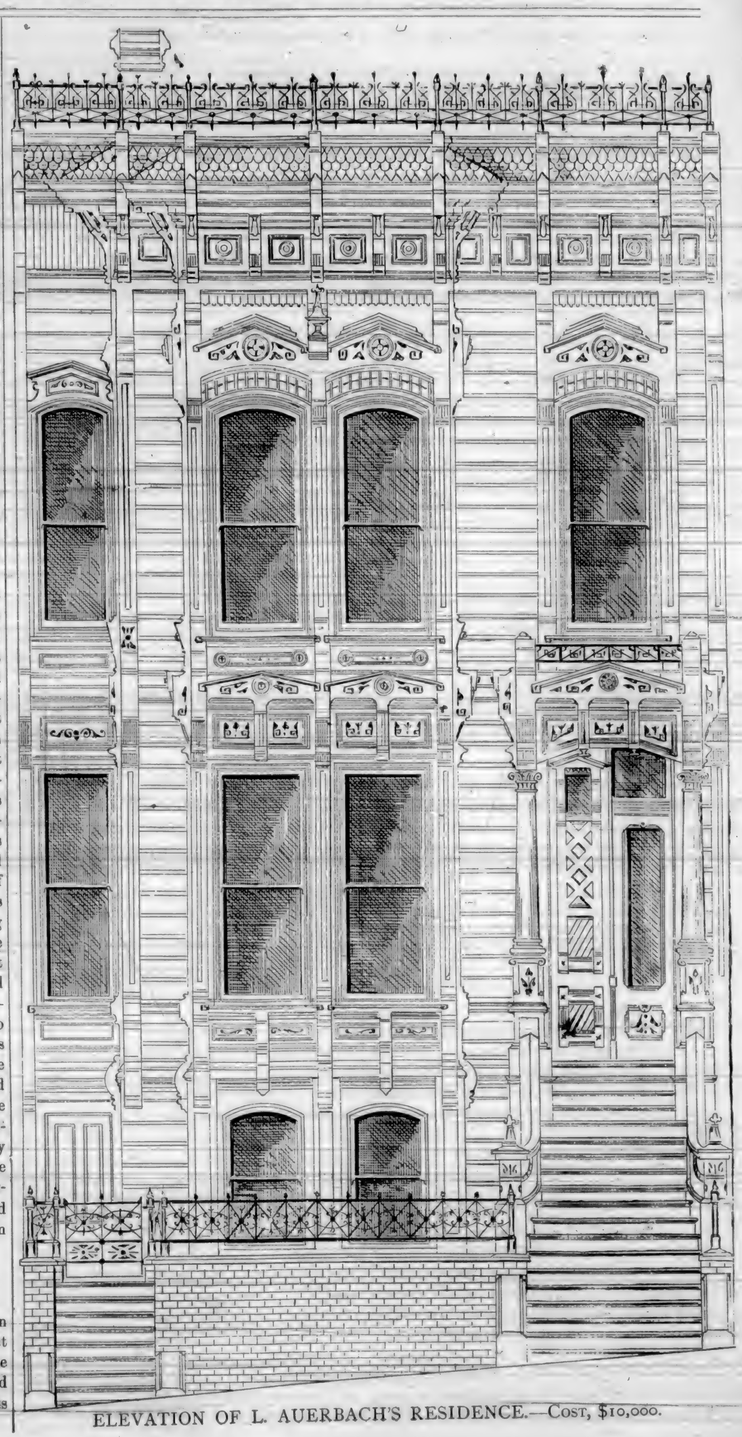
THE many absurd errors made manifest by the unreasonable difference, more generally prevailing in connection with estimates submitted for the erection of buildings, and the execution of mechanical works generally, is greatly to be regretted, for the reason that it lessens the confidence of owners in the competency and qualifications of contractors to intelligently determine the value of buildings or work offered for estimates.

It is not to be expected that each man should arrive at precisely the same conclusion as to costs, for the balances are not equal in all minds, and reasonable differences are legitimate. But when the discrepancies run from ten, twenty, fifty, and sometimes one hundred per cent or more, the fact becomes plain that absolute incompetency, unpardonable carelessness, excessive avarice, or an unintelligent understanding of what is contemplated, has controlled some of the parties figuring; and it is altogether proper for those offering work for estimates, to form adverse opinions as to the qualifications of contractors, when results as indicated are submitted for their consideration.

Nor is it always possible for architects to disabuse the minds of clients, that some of those who have estimated have not contemplated unfair and excessive advantages, and sought to secure more than legitimate gains and profits upon the operation proposed, which, followed to a logical conclusion, suggests, if it does not fully prove, that there are men even among "honest mechanics," who would not scruple to obtain other people's money without fair compensation—all of which tends to injure the reputation of those who manipulate figures in estimating, and devote their lives and energies as "master mechanics." All of these irregularities grow out of a lack of proper education and understanding of things generally, and a demoralized sentiment among contractors, who, as a class, figure and operate as each may deem best, using good and honest intent and correct judgment, or well-studied devices and unscrupulous means to secure—and in the management of work falling into their hands, as the case may be. All of this places at a disadvantage, if it does not make cheats and tricksters of good men, who would prefer fair and upright dealings, but are driven by surrounding circumstances and conditions to accept and practice the methods by which unscrupulous men make money, or be satisfied with the pittances which too generally follow in the path of those who stand upon the higher ground of strict integrity in all their transactions.

Garland's Trap.

PERHAPS the best recommendation that can be given to this Trap is to mention the fact that all the traps throughout the Lick House were removed to give place to the Garland Trap. This action speaks volumes for its merits.



ELEVATION OF L. AUERBACH'S RESIDENCE.—COST, $10,000.

The Competitive Pioneer Building Plans.

IN response to the invitation of the Building Committee, ten sets of plans, representing ten architectural firms, or combination of firms, have been submitted and placed on exhibition in the rooms of the society.

We do not propose at the present time to express an opinion as to the merits of the three or four better conceptions, but we do propose to say that the exhibit as a whole is not as creditable to the architectural talent of San Francisco as we should like to have seen, either in design or mechanical execution. With the more meritorious removed, the showing is poor, not coming within the limits of being worthy of serious attention.

The general result is in exact accord with the views expressed in this Journal in relation to the competition; and we are not, but should have been greatly suprised, had there been under the circumstances, and under the conditions proposed by the committee, a single set of plans and specifications submitted so *conspicuously meritorious*, as a whole, as to secure general and specific acknowledgment of superiority. As it is, there is great diversity of opinion upon the merits of the three or four sets of plans named as likely to receive favorable consideration, the others on exhibition being considered as "from poor to middling," and so on down to productions which should cause the blush of shame to mantle the cheeks of their authors, and would have that effect if all modesty and self-respect was not stultified by a superabundance of architectural libertinism or presumption.

The actual cash cost of the ten plans on exhibition will average not less than $350 each, or a total of $3 500. The greatest return possible under the conditions will be $950; so that the committee will ever hereafter enjoy the reflection that, by their management of the matter, seven silly men are out of pocket about—and perhaps more than $2,550. We do not pretend to say that the committee intentionally and designedly caused this result, but, whether of design or unintelligent management, the result is not changed, and seven men are none the less losers by the transaction, while the eighth and ninth, or those receiving the second and third prizes, will also be losers in the amount of $300, which added, will increase the total cash loss to nine men to $2,850.

Besides this, as has been stated in former issues, it is possible, and it sometimes so happens, that the plans receiving the first premium are second or third in actual merit, and, not unfrequently, the third *man* more than the merits of the third best plans, receives first premium. This course is excused upon the grounds of greater qualifications in the person of the third party as superintending architect. But that fact does not purify the act which draws men into competition upon the supposition and assurance that results will be determined solely upon the ground of merit in the plans presented, to the exclusion of all personal preferences and considerations. If plans are invited from parties without discrimination, then discrimination should not be admitted in determining issues as to plans, and when this is departed from, injustice intervenes.

We have no reasons to suppose that there is the slightest probability of such a course of action in the present case, but the possibility nevertheless exists.

Desirable Business Localities.

THE future of property on the line of Market and California Streets, and within the triangle formed by the streets named, is established beyond all peradventure. But the frontage on these and the intervening streets being far short of sufficient to supply the demands for choice business building sites, many who were compelled, or from choice desired to erect brick structures sufficient to meet the requirements of increased and increasing business, have been forced to seek out other streets and localities to find suitable purchasable property. Consequently the side streets, particularly those running southeasterly from Market Street, and lying northeasterly from First Street, and between Market and Mission Streets, have been the first to find favor with purchasers; and a number of substantial brick edifices have been erected on lots heretofore encumbered by old, worn-out frame, or dilapitated brick constructions; and it is a mere matter of time when the mills, shops, factories, and shanties of various character, at present occupying lots within the limits mentioned, will give place to permanent business structures.

FIRST STREET PROPERTY,

Between Market and Mission, which for so many years has remained at a stand-still, is now attracting attention; and with the removal of Union Foundry, which is likely to occur at an early day, there will be a general clearing away of the many old, worn rookeries, to make room for fine business buildings.

North from Market Street, judging from very suggestive indications, property on the line of

DAVIS STREET,

from Market to at least Washington Street, is among the most inviting, off from the prime avenues. The block from Market to California is built up solid with substantial buildings except one corner, which is in good hands and will in due time be changed from present one-story building, to one of several stories. The corners of California and Davis Street, are well improved, and also the southeast corner of Sacramento Street, the latter by Wangenheim & Co.'s four-story brick edifice. And preparations are now in progress to clear away old, and construct new buildings within the block last named. The property forming and running north from the northeast corner of Sacramento and Davis Streets, we are informed, is settled on for early improvement; and when what is now contemplated for Davis Street in the way of permanent buildings shall occur, which will be at an early period, the advance in present value of property on that thoroughfare will be vastly increased.

The experience of those seeking investment in business property—those who have declined to purchase at rates possible at certain periods, preferring to wait for a decline, have found prices at the end of one or two years waiting, largely advanced. So that it is safe to advise those seeking investments in the class of property referred to, not to procrastinate too long, as delays are dangerous, and time, as far as real estate in the business portion of the city is concerned, is more likely to advance than recede in prices during the next five years, at least.

Utilizing Old Files.

WORN-OUT files appear to be one of the few discarded articles in a machine shop for which no extensive use can be found. And yet files are made of the best cast steel and are in handy form for many purposes. The principal difficulty in the way of their economic utilization is that it costs more to remove the tooth marks and their consequences than the value of the resultant steel. It is quite futile to attempt the reforging of an old file so long as the chisel marks are left in; the steel will be "rotten." And it is not usually enough to barely remove the chisel cuts from sight, for the effect of the chisel cuts and hammer blows extends below their apparent bottom. It is evident, however, that there is a core of clean, useful steel below this corrugated surface.

In a shop recently visited a very inexpensive process of removing the tooth marks of old files was noticed. A belt led from a small pulley on the axle of the grindstone to a horizontal shaft near the floor, and as far forward as the front of the grindstone. This shaft carried a bevel gear that engaged with another on an upright shaft at the side of the grindstone frame, on the top of which was a slotted disk carrying a stud that could be secured at any point in the slot, thus forming a crank of differing radius. To this stud was attached a pitman that gave a reciprocating motion to a slide that received a file, held at point and tang, the slide or its box being kept against the face of the stone by a spring. Thus the file was passed back and forth against the face of the stone, not only gradually losing its tooth corrugations, but keeping the stone razed to an even face. No attention was necessary, but an occasional turning of the file from one side or edge to another, and its removal and replacement by another file.

These smooth file blanks were then useful for a variety of purposes—scrapers for finishing, cutters for boring bars, flat reamers, etc.—*Scientific American.*

B. E. Henriksen.

THIS gentleman has the honor of being the pioneer native-born architect, claiming, as he does, April 19, 1851, in this city, as the date and place of his nativity.

In June, 1866, he entered the office of P. Huerne as an apprentice. Passing through the grades of student, draughtsman, and associate, in 1875 we find him connected with that gentleman as partner. He remained in that capacity until September, 1881.

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The Competitive Pioneer Building Plans.

In response to the invitation of the Building Committee, ten sets of plans, representing ten architectural firms, or combination of firms, have been submitted and placed on exhibition in the rooms of the society.

We do not propose at the present time to express an opinion as to the merits of the three or four better conceptions, but we do propose to say that the exhibit as a whole is not as creditable to the architectural talent of San Francisco as we should like to have seen, either in design or mechanical execution. With the more meritorious removed, the showing is poor, not coming within the limits of being worthy of serious attention.

The general result is in exact accord with the views expressed in this Journal in relation to the competition; and we are not, but should have been greatly suprised, had there been under the circumstances, and under the conditions proposed by the committee, a single set of plans and specifications submitted so *conspicuously meritorious*, as a whole, as to secure general and specific acknowledgment of superiority. As it is, there is great diversity of opinion upon the merits of the three or four sets of plans named as likely to receive favorable consideration, the others on exhibition being considered as "from poor to middling," and so on down to productions which should cause the blush of shame to mantle the cheeks of their authors, and would have that effect if all modesty and self-respect was not stultified by a superabundance of architectural libertinism or presumption.

The actual cash cost of the ten plans on exhibition will average not less than $350 each, or a total of $3.500. The greatest return possible under the conditions will be $950; so that the committee will ever hereafter enjoy the reflection that, by their management of the matter, seven silly men are out of pocket about—and perhaps more than $2.550. We do not pretend to say that the committee intentionally and designedly caused this result, but, whether of design or unintelligent management, the result is not changed, and seven men are none the less losers by the transaction, while the eighth and ninth, or those receiving the second and third prizes, will also be losers in the amount of $300, which added, will increase the total cash loss to nine men to $2.850.

Besides this, as has been stated in former issues, it is possible, and it sometimes so happens, that the plans receiving the first premium are second or third in actual merit, and, not unfrequently, the third *man* more than the merits of the third best plans, receives first premium. This course is excused upon the grounds of greater qualifications in the person of the third party as superintending architect. But that fact does not purify the act which draws men into competition upon the supposition and assurance that results will be determined solely upon the ground of merit in the plans presented, to the exclusion of all personal preferences and considerations. If plans are invited from parties without discrimination, then discrimination should not be admitted in determining issues as to plans, and when this is departed from, injustice intervenes.

We have no reasons to suppose that there is the slightest probability of such a course of action in the present case, but the possibility nevertheless exists.

Desirable Business Localities.

The future of property on the line of Market and California Streets, and within the triangle formed by the streets named, is established beyond all peradventure. But the frontage on these and the intervening streets being far short of sufficient to supply the demands for choice business building sites, many who were compelled, or from choice desired to erect brick structures sufficient to meet the requirements of increased and increasing business, have been forced to seek out other streets and localities to find suitable purchasable property. Consequently the side streets, particularly those running southeasterly from Market Street, and lying northeasterly from First Street, and between Market and Mission Streets, have been the first to find favor with purchasers; and a number of substantial brick edifices have been erected on lots heretofore encumbered by old, worn-out frame, or dilapitated brick constructions; and it is a mere matter of time when the mills, shops, factories, and shanties of various character, at present occupying lots within the limits mentioned, will give place to permanent business structures.

FIRST STREET PROPERTY,

Between Market and Mission, which for so many years has remained at a stand-still, is now attracting attention; and with the removal of Union Foundry, which is likely to occur at an early day, there will be a general clearing away of the many old, worn rookeries, to make room for fine business buildings.

North from Market Street, judging from very suggestive indications, property on the line of

DAVIS STREET,

from Market to at least Washington Street, is among the most inviting, off from the prime avenues. The block from Market to California is built up solid with substantial buildings, except one corner, which is in good hands and will in due time be changed from present one-story building, to one of several stories. The corners of California and Davis Street, are well improved, and also the southeast corner of Sacramento Street, the latter by Wangenheim & Co.'s four-story brick edifice. And preparations are now in progress to clear away old, and construct new buildings within the block last named. The property forming and running north from the northeast corner of Sacramento and Davis Streets, we are informed, is settled on for early improvement; and when what is now contemplated for Davis Street in the way of permanent buildings shall occur, which will be at an early period, the advance in present value of property on that thoroughfare will be vastly increased.

The experience of those seeking investment in business property—those who have declined to purchase at rates possible at certain periods, preferring to wait for a decline, have found prices at the end of one or two years waiting, largely advanced. So that it is safe to advise those seeking investments in the class of property referred to, not to procrastinate too long, as delays are dangerous, and time, as far as real estate in the business portion of the city is concerned, is more likely to advance than recede in prices during the next five years, at least.

Utilizing Old Files.

Worn-out files appear to be one of the few discarded articles in a machine shop for which no extensive use can be found. And yet files are made of the best cast steel and are in handy form for many purposes. The principal difficulty in the way of their economic utilization is that it costs more to remove the tooth marks and their consequences than the value of the resultant steel. It is quite futile to attempt the reforging of an old file so long as the chisel marks are left in; the steel will be "rotten." And it is not usually enough to barely remove the chisel cuts from sight, for the effect of the chisel cuts and hammer blows extends below their apparent bottom. It is evident, however, that there is a core of clean, useful steel below this corrugated surface.

In a shop recently visited a very inexpensive process of removing the tooth marks of old files was noticed. A belt led from a small pulley on the axle of the grindstone to a horizontal shaft near the floor, and as far forward as the front of the grindstone. This shaft carried a bevel gear that engaged with another on an upright shaft at the side of the grindstone frame, on the top of which was a slotted disk carrying a stud that could be secured at any point in the slot, thus forming a crank of differing radius. To this stud was attached a pitman that gave a reciprocating motion to a slide that received a file, held at point and tang, the slide or its box being kept against the face of the stone by a spring. Thus the file was passed back and forth against the face of the stone, not only gradually losing its tooth corrugations, but keeping the stone razed to an even face. No attention was necessary, but an occasional turning of the file from one side or edge to another, and its removal and replacement by another file.

These smooth file blanks were then useful for a variety of purposes—scrapers for finishing, cutters for boring bars, flat reamers, etc.—*Scientific American.*

Album of Mantels.

A perfectly new work containing sixty large plates of designs for every description of mantels in wood, stone, slate and brick.

In our last issue the price was incorrectly given at $5.00. It should have been **$8.00**. We will forward a copy to any address upon receipt of eight dollars.

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Peculiar Wood Working.

THE auger is intended primarily for making holes in wood, yet the only cutting or boring portion is the chisel lip on its lower end: and if the implement could be kept at its work and guided in its course, the gimlet screw at its point and the spiral above its cutting portion might be dispensed with, as the screw merely pulls the cutter into the work and the spiral guides the auger and elevates the chips. So the auger, deprived of these portions, becomes a rotary cutter by which straight or curved recesses of a definite width may be cut. Mortises for tenons are made with such an implement, and it is used also for many other similar purposes.

An adaptation of the circular saw is more peculiar than this. It is the cutting of a wide kerf with a thin saw; thus a saw of one-fourth of an inch thickness, or "set," cuts a score, or slot, of three-quarters of an inch or more. In appearance the saw is anything but mechanical, and at first thought the method is "sloppy" and foolish. But the result of the work is good. The effect is produced by placing a circular saw on an arbor somewhat smaller than the hole through the saw, and canting the saw to an angle by means of convex faced glands or flanges. When rotated the saw's periphery has a "wabbling" motion, so that twice in its revolution the saw cuts out of its true kerf on either side. It will be seen that if the quarter-inch saw is set one-quarter of an inch out of truth on its side, it will cut one-quarter of an inch on each side, making, with the primary thickness of the saw itself, a cutting width of three-quarters of an inch. This apparently crude method produces very satisfactory results. It might be supposed that such eccentricity of movement from side to side would leave very coarse score mark on each side of the cut, but the velocity of the saw's rotation compared with the feed insures perfectly clean work. The advantages of this method are that the power required to cut a wide kerf with a narrow saw by gradations is much less than to cut the full kerf at once with full wide cutters, and that while a saw can be of diameter large enough to cut through a wide or thick piece of lumber, there is a much lower limit to the economical and effective projection of chisel cutters from a head. One of the largest manufactories of agricultural and domestic machinery and implements in the country has used circular saws in this manner for years.

SCISSORS have become the subject of a new patent. We thought this was impossible. Some one has attached a third blade, to be used exclusively for ripping.

MILDEW may be removed by dipping the stained parts into butter-milk, and putting them into the sun.

MOTH-INFESTED articles should be saturated in naphtha or benzine. It injures nothing, and kills the destroyer.

Ventilated Bedclothes.

CONSIDERING that most of us pass one-third of our lives in bed, it is manifestly of considerable importance to see that the conditions under which we exist for eight hours out of every twenty-four are, as far as we can make them, healthy. It must be obvious that it cannot be conducive to health to accumulate the exhalations from our bodies, and adopt such measures as may insure our taking them again into our lungs. That which is thrown off, either in the breath or by prespiration, sensible or insensible, must clearly be excrementitious, and therefore ought to be allowed to pass away. We should not breathe air or vapor which is laden with the debris of the body, though that body be our own. Another point of moment is that we should not allow our strength to be weakened by excessive heat and action of the skin during a third of our time.

It is, therefore, with great pleasure we find that an attempt has been made to ventilate quilts. We do not quite understand the process which has just been patented, but it is said to consist in a system of perforations which are filled in with some substance that allows the vapor to escape. We are informed that the artifice, whatever it be, is entirely successful. Something of the sort is beyond doubt much needed. It is well to lie warm at night, so far as the more important parts of the body are concerned; but it is most undesirable to be too warm, and, above all, "stuffy," while we sleep.—*The Manufacturer and Builder.*

Bricks.

THE best method of developing the art of building in brick has occupied the attention of architects and engineers in Switzerland for some years, and with this view it has been determined to attempt to fix a certain standard size of brick, and a report was presented to the Swiss Society of Architects and Engineers, in which the dimensions recommended were 9.84 inches by 4.72 by 2.36 inches. As, however, these dimensions were not agreed to by all sections of the society, a special federal commission was appointed in December, 1882, to inquire into the subject. A report was presented to the General Assembly of Cantonal delegates at Berne by M. Favod. With regard to the question of price, of course, if the manufacturer sells his bricks by the thousand, without reference to size, the smaller they are the better for him. The contractor, too, is apt to prefer small bricks, because with them he uses more mortar, which costs him less; but, on the other hand, he requires more bricks per cubic yard (the number of bricks of different sizes in a cube meter of work are given), and there is more labor in setting them, so that what he gains in one way he loses in another.

In regard to the quantity of mortar, Dr. Boehme's experiments at Berlin in 1875 proved that no more mortar than was actually necessary to keep the course horizontal and effect the cohesion of the bricks (for which purpose joints of 0.4 inch thick are ample) should be used. as whether the mortar becomes more or less hard than the bricks, the result is in either case to reduce the strength of the work.

Experiments made with blocks of twenty sound bricks, one set of blocks cemented with various kinds of mortar and cement (the joints 0.4 inch thick), another set consisting of bricks laid dry, and surrounded with cement simply to keep them together, gave, as mean resistances to compression: For the first set, 1,618 lbs. per square inch to cause splitting, 1,934 lbs. for the destruction of the bricks; and for the second set, 2,202 lbs. per square inch to cause splitting, and 2,291 lbs. per square inch for destruction, showing that the dry bricks gave a mean resistance of one-third more than those set with mortar before splitting, and one-fifth more before destruction.

The author, therefore, concludes that to secure the greatest strength, thick bricks, with a minimum of mortar, should be used. The author suggests that the price of bricks per thousand should vary, according to the number required per cubic meter of work, so that the manufacturer may be paid according to the size of the bricks. Finally, he recommends that the standard brick should have the dimensions 9.84 inches by 4.72 inches by 2.56 inches.—*Cincinnati Building Review.*

Hints in Fret Sawing.

A PRACTICAL fret-sawyer gives the following useful hints to amateur workmen: In cutting a pattern of any kind make it a rule to leave the outside until the last, especially where there are any single leaves or flowers at the sides or corners. Never allow the saw to become very hot, or a breakage is pretty sure to be the result. Notice before commencing work whether there are any knots in the wood, and if so mark the spot with a pencil on your pattern, and work very cautiously when you come across it. Stop working directly you see your saw edging away from or into the pattern, and make a fresh start in another place. When you have finished sawing out your bracket or whatever it may be, remove your pattern by moistening it with a little cold water, and while the wood is still damp fasten it on to your table with small nails pushed into the corners of the pattern. When thoroughly dry the bracket must be well sandpapered, firstly with a coarse, then with fine, and thirdly with oiled fine sandpaper. Rub in plaster of Paris with oil, dry twenty-four hours, then polish or varnish.—*Art Amateur.*

WOODEN PAVEMENTS IN BERLIN.—It has been noted as a curious fact by some observant person, that while wooden pavements have proved such miserable failures in almost every American city, they have proved very successful in Berlin. There should be some reason for this, and our engineers should have sufficient curiosity to findout what the reason is.

The Pyramids of Teotihuacan.

BY E. J. MOLERA.

Two years ago I had the opportunity of visiting the famous pyramids of Teotihuacan. I had the good fortune of making the trip with Mr. Ziehl, a German Mexican, member of the Mexican Geographical Society, a fine Mexican philologist, one of the few who had visited the pyramids and knows a great deal about them, having formed part of the Mexican Commission sent to Teotihuacan to explore the monuments there.

Early in the morning we started on the Vera Cruz train, which is there as our overland. On board we had a body of 200 soldiers to guard the train, a luxury the United States could not afford with her little army.

The sun was spreading his golden rays over the silvered tops of the Popocatepetl and Iztaccihuatl, flooding with light the beautiful and romantic valley of Mexico. Moving along with the train, the imagination cannot keep pace with the numerous recollections that history brings to the mind by the sight of the monuments spread before the eyes of the traveler.

We see, at our starting "Coapan," "Tlatelolco," and "Saint James Tecpan," where the heroic Cuauhtemoc, the last emperor of the Aztecs, was taken prisoner while endeavoring to run away with his family in a canoe. He is said to have told Cortez to kill him, as he could no further defend his country. Near that very spot are the ruins of the palace of the Aztec governor sent by the Mexican Crown to the city of Tlatelolco. A moment after we are at the Guadalupe Causeway, built by the Franciscan monks, at the head of which presided Fray Joan, of Torquemada, the Mexican Titus Livius. At the end of that causeway we find Guadalupe, where the treaty between the United States and Mexico was signed in 1848. There is the temple, where the Indian virgin is worshiped. A mast of a ship can be seen carried all the way from Vera Cruz by sailors who believed themselves to have been saved by that virgin from shipwreck. At our right we see Lake Texcoco, covered formerly with acalis, as to-day is Chalco, with chinampas, or floating gardens. Only a few minutes more and we pass Ehecatepec where the patriot Morelos was shot in 1815. After a little while we stop at the station of Teotihuacan to go by stage to the town of the same name. From that point we walk for a mile through a thicket of cactus, organs, perus, etc., and arrive at a deep gulch, which we cross, and find ourselves in a troglodytic field. Numerous openings show the entrances of subterranean caverns. I entered some of them, but did not find the end of many; they probably intercommunicate with one another, and go to great distances. Here begins the Indian sacred ground; at every step we find obsidian points, which are there still called by the Aztec name of *itztli*. A short walk places us before the great pyramids.

They are situated at twenty-eight miles from the Capital of Mexico, to the northeast,