

Want to Build Cheaply.

THE number of owners desiring to build cheaply, who do not start in with cheapness as a material factor, are the exception; the rule being to contemplate a building or buildings of certain size and character, and fixing the sum of intended expenditure from ten to fifty per cent. less than sufficient for the purpose. The very first thing sought to be impressed upon the mind of the architect is—that the outlay must not exceed a certain amount, although the improvement desired may reasonably be worth a much greater sum—if built in accordance with the prevailing demand for "good work," "first class," etc. If owners were more reasonable in their exactions, being willing to accept the only class of work possible under the restricted cost proposed, it would be all well enough; but the price is almost always fixed upon the basis of slop-shop, shoddy work, accompanied with—"I want a good, substantial, well-built building," and sometimes even a "first class structure." The inconsistency of the proposition amounts to ridiculousness. A customer who would approach a merchant or dealer in any class of goods, wares, or merchandise, and propose to buy salable articles in the regular way at less than cost of production, would receive but little if any attention, and perhaps the intimation that his custom was not desired. It is a very common thing for men who make ridiculously low offers for things that they would like to possess to be told to go where there is more need of iced water than overcoats. Yet it is equally as just and fair to ask a tailor to make a suit of clothes intrinsically worth \$75 for \$50, or a jeweler to sell a "first-class" time-piece at the value of the gold used in its manufacture, as to exact of architects and builders the erection of a house of a certain prescribed class and character, at a cost sufficient only for a far inferior construction. Owners have a right to fix the sum of outlay, but it is not fair for them to demand, in return, material and labor far in excess of such limits. And it is but little less than a business outrage for men to define both cost, size, and quality, and then reproach architects because they cannot accomplish impossibilities. If the instruction run: build me a house of certain size and accommodations for a certain amount, with no exactions as to the specific fittings, appointments and class of work, other than "the best that can be afforded for the stipulated sum," there would be consistency. But there is none when the limits and requirements diverge ten to fifty per cent.—a thing very common in the experience of competent architects generally.

The effect of this is bad, as it places architects who are honest and competent at a disadvantage, and greatly demoralizes the science of architecture in its technical and constructive features; and gives larger opportunities to the class of frauds operating under the name of architects, who are unworthy the

name in any respectable sense, and who play upon owners' credulity with the deceit of cheapness, while, in fact, the latter is simply a sacrifice to misplaced confidence in men who do no more than others might do, if they would lower themselves to the same level of architectural botchery.

Bed-Rooms.

NO BED-ROOM should be sombre. Sanitary reasons underlie what seems to be merely a matter of preference. It is pretty well understood that dark wall-papers absorb not only light but infectious qualities in the atmosphere. On this score wall-paper is considered by the best medical authorities as objectionable, and rooms that have been repapered after having had in them contagious diseases, it has been found that years afterwards in removing the paper from the walls the germs have been sufficiently preserved to reproduce the infection. This, however, is a risk that is rarely run in private life. The papers that are now made for bed-rooms are so attractive that one may be well tempted to use them. What are known as the Morris designs—vines and flowers over surfaces broken by lattice-like bars—have been the suggestion for the greater number of the bed-room papers that are now produced. There is one advantage in these that is worth considering, and that is what is known as the repeat of the design is so dexterously concealed that in illness or nervousness they have not that element of torment that every one, who has had the misfortune of illness, can recall in the old-fashioned wall-papers.

Dados are not used in bed-rooms, but the frieze is of importance. Tinted walls are to be preferred even to artistic wall-papers. I have in mind a delicately tinted pink wall, with a deep frieze of wall-paper in luscious pink and cream roses on a gilt ground, with a small gilt molding between the field and frieze. Painted walls are cleaner, healthier, and every way to be preferred. Light tints are, of course, most desirable, and the wood-work, if painted, can carry out the same scheme. For example: The walls are of a faint pink; the frieze has a gilt molding, a deeper tinted pink band leading into the cove, which is faint pink and greenish-gray, separated by gilt lines; the ceiling is faint pink with a center ornamented in pink, gray, and gilt. The doors have their panels of pale pink with gilt molding; the sides and frames are greenish-gray.

This is simply a hasty sketch of one room. Deeper greenish-gray and red, olive and pink, turquoise or robin's-egg blue and greenish-gray, buff and scarlet are all tints that can be used together in the same way.—*Mary Gay Humphreys, in Decorator and Furnisher.*

THE price of logs in the neighborhood of Astoria, Oregon, has advanced from \$5.00 to \$6.00 a thousand.

All new subscribers for 1884 will receive the balance of this year free.



Architects, Contractors, Carpenters, and Mechanics generally are respectfully requested to furnish us items of interest for this column. We will gladly answer any and all questions pertaining to the architectural and building interests. If illustrations are necessary to explain your ideas, send us a sketch of them and we will make the cuts.

Trade Circulars.

AS AN architect, I am astonished at the number of trade circulars that reach me daily. Nearly every post brings a batch—large sheets, small sheets, books, show-cards, pamphlets, and samples; and if I were to preserve all I receive for future reference (and I would like to) I should require an extra office and clerk for arranging them, to say nothing of the wall-space to hang the cards upon. The result is that the waste-paper basket receives by far the larger portion. This, to me, appears to be a great waste of cash, and must come out of the profits. I am quite alive to the importance of being in possession of a knowledge of the various manufactures, and carefully scan all circulars I receive, and keep large piles for reference, the accumulation of which upon forty years; but it has often occurred to me that if something like order were adopted by the senders, in the sizes of their documents, they would be much more likely to be saved, and much easier for reference. Suppose, for instance, that all documents were issued foolscap size, a file of these would not be un-ightly, and would fit the ordinary foolscap receptacles, and references would be facilitated by turning over leaves all the same size, instead of which my shelf of trade circulars, although kept as well as can be, is a complete muddle, and to find what you require is like searching for a needle in a bundle of hay. As an instance, this morning's post brought me two documents, one a book 6 inches by 3½ inches, and another a sheet 3 feet 3 inches by 2 feet 2 inches. The question is what am I to do with them—for they are both worth saving? H. M. (BUILDER.)

"DEAL."—Readers of technical journals are often puzzled by the use made of the word "deal" by nearly all foreign publications, and some home ones. As generally used it means simply a piece of soft wood lumber; but the strict definition of the word, as understood by the English timber merchant, is, soft wood timber, imported, and sawn to the section of 9 x3 inches, or 8x4 inches, or 10x4 inches. Similarly "planks" are 12x3 inches or 12x4 inches, and "battens" 7x2½ inches, or 7x3 inches, all irrespective of length, which varies considerably, and of the country or port they come from.

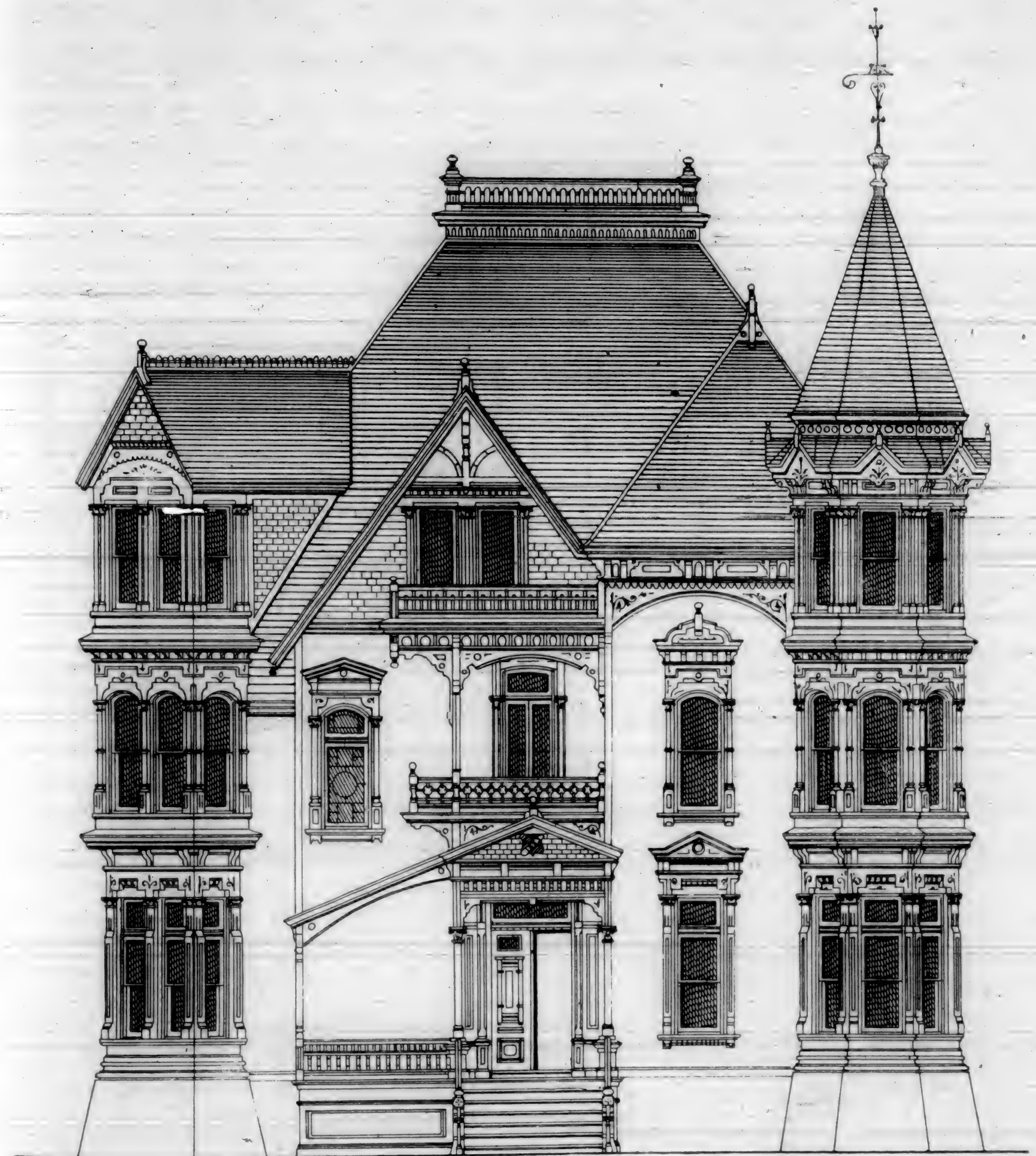


PLATE 2.—SUBURBAN RESIDENCE—COST FROM \$12,000 TO \$15,000.

We desire to have a uniform time for the commencement of all our subscriptions. In order to do this, we have credited those whose subscription commences in any month between July and January with the difference so their time will begin with the first month of the year. New subscribers will receive the remaining numbers of the year free of charge. All subscriptions must begin with either July or January.

American Institute of Architects.

A FULL report of the proceedings of the Institute, which commenced its seventeenth annual session at Providence (R. I.), on the 29th ult., has been forwarded to this journal, and we regret that lack of space precludes more than a brief mention of a few of the many prominent matters of interest brought forward during the several sittings. The following extracts will doubtless be read with interest by architects on the Pacific Coast:—

"The walls were hung with many fine specimens of architectural drawing, contributed by the members, one remarkable design being the outgrowth of a discussion held at the last annual meeting in Cincinnati, over the erection of a building in New York City for the Institute. The artist, with uncommon skill and nicety of finish, had combined all the architectural forms of ancient and modern schools in a massive and lofty structure, which commanded the admiration of all, in that it displayed a thorough and accurate knowledge of architectural science."

There is something pleasing to every intelligent architect in the above extract, as it touches the higher and finer chords of architectural thought and reflection, and presents suggestions far removed from the lesser order of things found in daily practice by architects in nearly all parts of the United States. There is so much of a demoralizing tendency practiced in the profession that incidents of the character quoted become refreshing to honorable men, who love the science of architecture as well for its intrinsic beauties and grandness, as for the profits flowing from its pursuit.—ED.

"The presiding officer of the Convention is Thos. U. Walter, LL.D., of Philadelphia, who ranks as the oldest member of the Institute by practice and years, and is a gentleman of dignified and imposing appearance. He commenced work at the drawing-board in 1829, furnished the plans for Girard College in 1833, and designed the wings and dome of the National Capitol in 1852, and for sixteen years was engaged in the perfection and completion of this master-piece of architectural art. Although advanced in years, he has a fine physique, and hale and hearty bearing, as the result of systematic exercise and daily application to his chosen art."

Would that one so worthy and able, and honorable in the profession, could live in the full enjoyment of all his physical and intellectual powers until the office-boys of the present day became gray-haired and old in following in his professional footsteps. The President's address contains much of stirring interest, closing as follows:—

"I take occasion to remark, in conclusion, that the unlimited freedom that characterizes the composition of architectural forms, at the present day, demands a far greater amount of study, and a higher degree of cultivation in the perception of the beautiful in art, than ever existed in the past."

"The simple and artistic forms of the Pagan world have yielded to the inspiration of a

higher civilization. The fetters that held architectural forms to classic models for centuries have been broken, and the fact has become patent that progress is the life-blood of architecture."

"Medieval art, glowing with the benign influences of Christianity, emancipated the processes of design from the trammels of formulated methods, and led to the subsequent development of the beautiful creations of the later Gothic school, which still claims our highest admiration, and our profoundest study."

"By tracing the mental processes by which the human mind has been led onward, from the first rude attempts of our race, to impress an artistic character on the art of building, up to the highest architectural developments of the present day, the student is prepared to abnegate all conventional trammels; and in view of the treasures of the past, laid at his feet by an exhaustive literature, he has acquired the habit of thinking for himself."

Reports of officers from numerous Chapters were received, all showing a healthful state of things generally, and an increasing interest in various sections of the country in Chapter work. New Chapters are being formed in many places not heretofore represented in the parent body. As a matter of local interest, we quote:—

"The San Francisco Chapter reported that it was progressing finely, having 41 members, with an average attendance during the year of 14; that it was clear of indebtedness, with a splendid set of books, etc.; and that it recommended that a regular time of holding the Convention should be adopted, so that the Chapter away off on the golden western shore might contribute to the body, that its 'good works may be seen of men.'"

It is with pride and pleasure that we refer to our home branch of the Institute, which in membership is about equal to, if not the largest, of any Chapter in the Union. And if the few worthy men in the profession who have thus far failed to unite with the Chapter would master their disinclinations and become Fellows, San Francisco Chapter would, beyond question, assume first position numerically.

A paper was read by Prof. G. Lanza, of the Institute of Technology, Boston, on "The Strength of Materials from Actual Tests;" also one by John A. Fox, F.A.I.A., of Boston, which "dealt in frequent and vigorous denunciations of 'architectural competitions.'"

We will give its full text in our next issue.

ELECTION OF OFFICERS.

The Committee on Nominations presented the following list of officers, who were unanimously elected:—

President—T. U. Walker.

Treasurer—O. P. Hatfield.

Secretary—G. C. Mason, Jr.

Board of Trustees, ex officio—H. M. Congdon, A. J. Bloor, E. T. Littell, Napoleon Le Brun.

Committee on Publication—H. H. Holly, Charles Crapsey, T. M. Clark, J. McArthur, Jr., G. C. Mason, Jr.

Committee on Education—Prof. W. R. Ware, N. Clifford Ricker, Henry Van Brunt, Alfred Stone, Wm. A. Potter.

Secretary for Foreign Correspondence—T. M. Clark.

President Walter, in accepting the position, thanked the Convention for the honor. He was sorry that he had not made himself more useful, but the wide distances between the Chapters made it almost impossible to meet the members but once a year. Heretofore he had done the best he could to further the interests of the Institute, and hereafter he would continue to do the same. He would accept the office with many thanks. [Applause.]

Mr. T. M. Clark, of Boston, read a very ably-prepared paper, upon "The Architect as a Sanitarian," from which we take only the opening sentence:—

"Not long ago a plumber, in describing to me the difficulties under which he, in common with the better class of his brethren, labors in competing for the work which architects have to give them, said that he had just come from an office in which the proprietor had been expressing the opinion that 'this fuss about plumbing and drainage was all humbug; that people used to live as long without it as we do now,' and that he 'didn't think there was anything in it.' Probably this individual is not the only one of his kind, and it is well worth considering whether the 'fuss' that some of us are in the habit of making about what we may call the organs of excretion in our buildings, is a proper and necessary part of our professional service to our clients, or merely the indulgence of a diseased appetite for novelty, to be gratified at our clients' expense. I trust there are not many among us who hold the latter view."

We should like to copy in full, but space will not permit in this issue.

Very many other matters of interest were presented, discussed, and enjoyed, and the Convention adjourned, with a recommendation that the Trustees, in whose hands the selection of places of meeting is reposed, select Albany, N. Y., for the next annual session of the Institute.

Paper Mill Directory.

We have received from the publishers, C. W. Bryan & Co., a copy of the above directory. From it we find that there are 4,463 paper and pulp mills in the world, of which number 1,099, or nearly one-fourth, are in the United States. There are eight mills in this State, the largest of which are those of the California Paper Company. The only kinds manufactured here are news and wrapping paper. The work is very handy for those interested, and is sold at the low price of \$1.00.

Modern Architectural Designs and Details.

We have just received a large number of this work. We regard it as one of the best books issued for architects and contractors. Sent post-paid to any address, upon receipt of \$10.00.

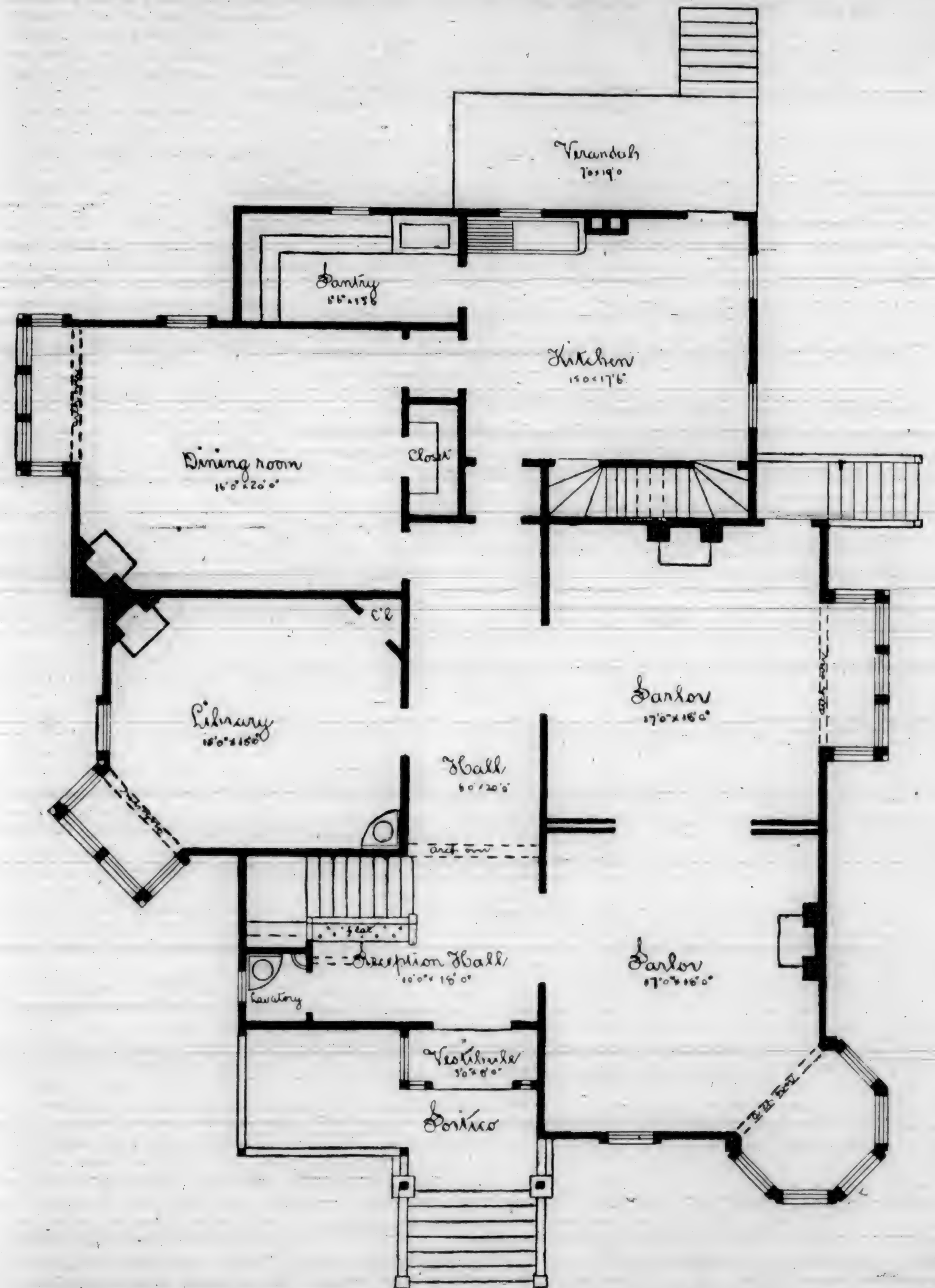


PLATE 3.—FIRST FLOOR PLAN OF SUBURBAN RESIDENCE.

The Annual Address

Delivered Before the San Francisco Chapter
of the American Institute of Architects,
by the President, John Wright,
F. A. I. A.

FELLOWS AND ASSOCIATES:—Conforming to what appears to be an established rule, that the newly-elected President shall open the proceedings for the forthcoming year by delivering an address, it falls to my lot once more to invite your attention to a few remarks, suggested by the occasion which has called us together.

I heartily congratulate you on the recurrence of these opportunities for friendly intercourse and mutual help—opportunities, it would seem, which we ought to hail with peculiar satisfaction, inasmuch as they not only open the way to all that is desirable in the way of professional association for its own sake, but it enables us, by taking a general review of the past year's work, to forecast the future, and with renewed hope and fresh encouragement to press forward in the prosecution of the important objects which the Chapter proposes to accomplish. It also enables us to promote, as a Chapter, as far as in us lies, those general projects for the good of the Institute at large which are at the present time engaging its attention. I would, therefore, in the first place, ask you to follow me in a brief review of those matters of more immediate interest to ourselves which have occupied our attention hitherto, and which we hope to develop in greater fullness in the future.

As will be seen by the Secretary's report, the number of members, consisting of Fellows, Associates, and Draughtsmen, is 41; but while our monthly meetings have been regularly maintained, the attendance at the meetings has not always been satisfactory. This may be owing, however, to the era of business prosperity with which the past year opened, and which may have interfered with the Chapter's sessions to some extent.

Several papers, on subjects of considerable interest, have been read during the year; and were this feature developed as it might be, greatly increased interest in the meetings would doubtless ensue. In this connection, I would suggest that, by pre-arrangement, promises of papers on special subjects might be obtained from different members of the Chapter, to be read on certain fixed occasions, according to their convenience. Were the titles of these subjects published beforehand, they would probably attract a greater number to the meetings, and at the same time much useful information would be gathered, and still others incited to aid in the good work. The abundance of material, and the varied nature of the almost universal knowledge needed in the theory and practice of architecture, renders selection easy, so that each may have an entire department to himself, without the least fear of having his chosen domain invaded.

I will now revert to a subject which has occupied a considerable share of our time and

attention during the past twelve months, namely:—

THE STUDENTS' CLASSES.

In alluding to this subject, I shall be compelled to refer you to the latter part of the address delivered by me before this Chapter a year ago, wherein three propositions were made, embodying a scheme for the gradual establishment of a sort of "Technical School of Architecture," the first of which was that free classes should be established for the artied pupils of the members of this Chapter; second, that a system of competitions amongst said students should be inaugurated; third, that a traveling studentship should be founded by the Chapter, and that a student should be selected by competition to receive the benefit of the studentship, at the end of three years. This scheme was, after due consideration, adopted as the basis of future operations, and the first proposition has been virtually put into effect.

Three classes have been established—one in practical architecture, one in free-hand drawing, and one in modeling, and have been in regular session for several months.

With the present Chapter year a mathematical class will be inaugurated, and as soon as proper arrangements can be made, a carving class will be put in operation—thus combining something practical with theoretical instruction, and so relieving the monotony of study by a delightful variation of real work.

It is also hoped that during the present year a proper course of reading may be laid out, and an effort made in the direction of a systematic series of competitions.

A class in construction is very much needed, and it is suggested that occasional Saturday afternoon visits be paid by the classes, under the direction of volunteer conductors, to some particular building in course of construction, or to some planing-mill or machine-shop, or to the rolling-mill or the glass-works, or wherever useful information may be gathered and practical ideas obtained, so as to supplement theory by an inspection and familiarity with the practical, on every possible occasion.

We do not hope to accomplish more than the above at the present time. Were our means greater, our progress would be faster. By the Treasurer's report, however, it may be seen that we are out of debt, and that we have a balance in his hands. Still, our progress must necessarily be slow. Time, as well as means, is necessary in the training of the young men, whose available leisure seems to be, even now, very much absorbed in their arduous though interesting studies.

The third and final proposition, embracing the founding of a traveling studentship, though still in abeyance, we hope to accomplish in due time. It has been suggested that the funds arising from life memberships should be devoted to this end.

It must not be forgotten, however, that there are many other important objects, which, to insure our success as a Chapter, must in due time receive our careful attention—the pro-

urement, at an early day, of a suitable room for meetings, classes, etc.; the formation of a library; the collection of materials for an architectural museum—all matters of most essential necessity, if our school is really to progress and prosper.

It must be remembered that without progress prosperity is impossible. As soon as the tree ceases to grow, it begins to die; and so it will be with ourselves. But there is growth of more than one kind. Growth in numbers is not the most important kind of growth, although what will conduce to that end in a healthy way is worthy of the most careful consideration. Growth in associated effectiveness is a growth of a better kind, and still more indispensable; and growth in individual excellence is a matter of the very highest importance, since the perfection of the whole body depends on that of each member. And here let me say that we must not allow ourselves to be daunted by the greatness of the task before us, either as individuals or as a body.

One thing that we may feel assured of is that true earnestness in these, the most worthy objects to which it is possible we can devote ourselves, will unfailingly meet with its due reward, not only in the confidence of a public which never fails to ultimately distinguish the true and disinterested from the false and selfish effort, but in the ultimate countenance and co-operation of many of those who, while they have proved themselves most worthy members of our profession, still look askance at our efforts, as though they were unworthy of their regard. We must prove, however, by acts, not words, our unyielding determination to succeed, and ultimate success is a foregone conclusion.

It is true that there are many difficulties to overcome. In other countries, the work we are striving to accomplish is undertaken by the Government. Italy, Germany, and France support extensive and elaborate establishments, furnished with every necessary appliance and help. The school of fine arts in Paris is rightly estimated to be the best in the world, and had under its care last year 270 painters, 190 sculptors, and 570 architectural students, and is supported by an annual subsidy of \$60,000.

Its museum contains the choicest examples of architecture and sculpture, constructive and decorative, from every quarter of the world, and in every known style, and is constantly increasing its collection. A course of study in this school is the recognized mode of training adopted by French architects. The student passes through an elaborate and systematic course of study, under competent professors. The French Government not only brings up the young architects in the way it thinks they ought to go, but when they commence life on their own account, it regulates them by a stringent set of rules, rigidly enforced.

In this country, however, the Government does not assume to foster its children with the paternal solicitude of older countries inured to

[Continued on Page 170]

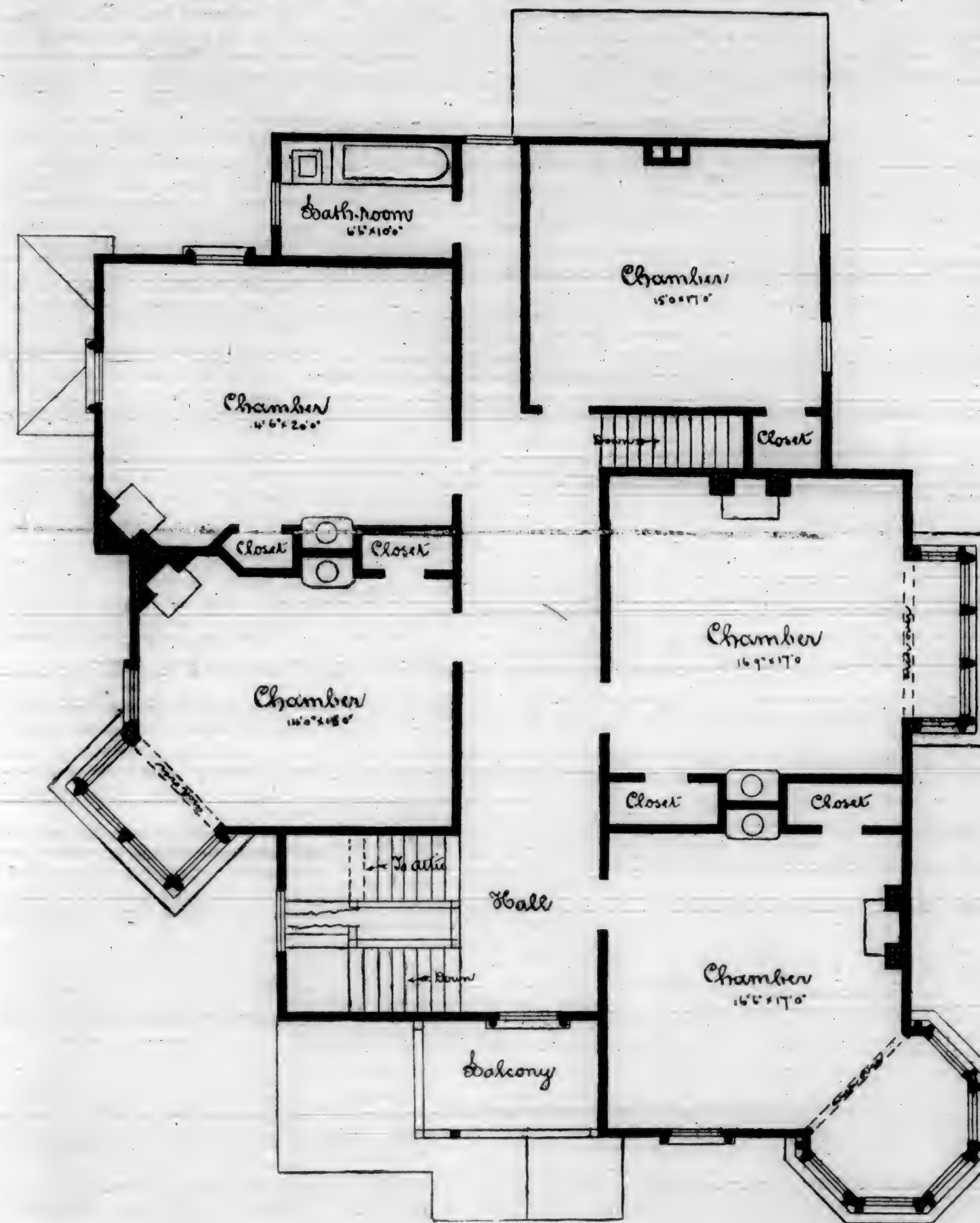


PLATE 4.—SECOND FLOOR PLAN OF SUBURBAN RESIDENCE.

We have just received a large number of Modern Architectural Designs and Details. This work should be in the possession of every Architect, Contractor, and Builder. Price—post paid—\$10.00.

(Continued from Page 168.)

the usages of monarchical methods, but ever leaves them to pursue their own predilections in freedom. And there is no doubt much wisdom in the method, for though at the present time, as regards architecture, at least, there has hitherto reigned only the negation of order, the wonderful tendencies of free institutions to ultimately settle by a sort of natural selection into appropriate forms of order and of law, encourages us to hope that, through mutual co-operation and a broad and fraternal feeling pervading our Institute as a whole, and each Chapter in particular, some system may in time be evolved which shall regulate and control by force of sentiment, rather than of law, the principles and practice of all our members.

As regards the question of professional education in general, a factor of such great importance to our national progress in the practice of our art, a few words may not be out of place.

There are in this country at least three recognized schools in which architecture is taught by theoretical as well as practical methods. The Illinois University, Columbia College, in New York, and the Institute of Technology at Boston, all afford, in varying measure, courses of instruction in architecture in which, apparently, very complete systems of study are provided. It is needless to say that the humble and as yet very incomplete attempt this Chapter has inaugurated is not intended even as a substitute for such a course as is above alluded to.

It is merely such a course as we are enabled to carry out without expense to the pupils, and without compensation to the teachers, unless it be the satisfaction they feel at being enabled in some measure to supply, by a practical effort, some of the many disabilities of our isolated position. And now a few words to the students in the language of an English architect of eminence:—

"After our Creator's glory and our country's service, nothing so surely claims our greatest energies, and our whole capacity, as our chosen calling in life, not only as an effort to earn our daily bread, but because whatever so necessarily absorbs the greatest share of our time and strength, both of mind and body, should at least be done nobly and well."

It is excusable, perhaps, for those who are compelled to toil in an endless round of monotonous and uncongenial employment, to seek in amusement some relaxation from the tedium of their life, though even the meanest and most repellant of callings may be lightened by the magic influence of a hearty good-will, and rightly viewed may even be engaged in with satisfaction if not delight.

But to the architect who has not mistaken his vocation, what can be more delightful than the ever-varying, always-inspiring aspect of the glorious Queen of the Arts—Architecture. "How she calls into equable play all the faculties of mind and body. At once sedentary and active, speculative and practical,

artistic and business-like, the architect must combine the most opposite qualities, can make useful the most varied tastes, and can turn to profit the most comprehensive information; nor should we deem anything whatever in the whole domain of science and history foreign to or useless in his studies."

With a field before him far wider than the most exalted faculties, the most untiring energy, and the most prolonged life can fully improve, the architect may yet remember with satisfaction that to the untiring assaults of an unyielding determination to excel, there is nothing in the whole realm of knowledge, and of art, that is necessarily beyond the reach of his attainment.

One at a time the rounds of the ladder of life may be mounted, and the faithful climber, who always looks up, and never looks back but to gain encouragement to mount still higher, though he may never attain the pinnacle of his desires, will soon be surprised at the vast horizon which opens to his views. And he will, while glorying in the progress he has made, be ever ready to lend a helping hand to the brother on the round below, and can afford to regard with generous pleasure and admiration the progress of his fellow on the round above.

These and similar considerations furnish an incentive to the young architect to study and to labor with diligence and zeal; for although absolute perfection within even the narrow limits of one profession be unattainable to man below, at least the basis may be laid, and an advance made by the earnest worker towards, not only a useful life in this world in his chosen path, but for an eternity of development of perhaps undreamed-of faculties, of wisdom, and of goodness, in that realm of life beyond the natural, to which, in various ways, and wide-diverging forms of belief, we all look forward.

It now remains to close with a few brief remarks on the objects and interests of the American Institute of Architects, as recorded in the proceedings of the Sixteenth Annual Convention, held in Cincinnati, Ohio, October 25, 1882.

The chief subjects of interest there recorded were, first: a motion to enlarge the fellowship of the Institute. A recommendation to that end was made by the committee having the same in charge, and mailed to each member of the Institute, together with a series of consequent changes proposed to be made in the by-laws of the parent body. These changes are made with a view to throw all necessary safeguards around the admission of fit and competent persons, and appears to be carefully drawn, and conceived in a critical though liberal spirit.

The idea of an examination of candidates would seem to be relinquished as impracticable, and, indeed, under the free institutions and broad constitution of the United States such a plan is not likely to be more successful than in medicine, where the quack and the charlatan too frequently carry off the lion's

share of patronage—at least, that of the ignorant and credulous.

The "voluntary examination" plan seems never as yet to have been brought to a successful issue. Were, however, the examinations made governmental and compulsory, as in law and education, the result might be different; but no private body could hope to command such an authority as to preclude the unauthorized practice of pretenders.

The most liberal course in this matter seems likely on the whole to attain the largest measure of success, the true guarantee to which will remain with each individual member after all.

The next question is germane to the last mentioned, and embraces the idea of a truly American Institute which embraces the dominion of Canada within its bounds. This seems worthy of the approval of all, and is of good augury for us too, for we have British Columbia to the north and Mexico to the south, both of which regions are in the line of great developments in the near future.

Another matter which has been touched upon is one with which we can surely sympathize. It is the idea that the Institute shall assist in the matter of traveling studentships. This is a step in the right direction and will lead, we think, to the ultimate development of one of the most useful functions of the parent body.

Another and final question of interest is the ultimate erection of a home for the Institute.

At the convention of 1882 it was proposed that a general competition should be invited, requesting designs from architects throughout the country, with the suggestion that the development of a "national style" should be the object aimed at. Under the circumstances, the suggestion is worthy of careful consideration.

It would seem, however, that the earnest and honest effort of each of us to develop to his utmost the truest and purest principles within his knowledge, modified and controlled by the climatic peculiarities and physical surrounding of each portion of our wide-spreading land, whether tropic, temperate or arctic, mountain or plain, is the course most likely to result in a realization of what may justly claim to be called a truly American style.

PAINTED woodwork may be classed among the necessary evils of house decoration. No one in his sober senses will put paint on good woodwork if he can get an equal effect by the use of natural wood. But the costliness of all hardwood, and especially the expense of working it, renders the use of pine practically inevitable.

A CORRESPONDENT writing from Pierre, Dakota, says that collections are made when the lumber is on the wagon. This is necessary for the safety of a dealer in a new country, as the people are strangers to each other, and no doubt many a dealer wishes the same custom was prevalent in older sections.—*Lumberman.*

Steel Square and Its Uses. Price \$1.00.



The Foreman.

THE position of foreman of a shop or boss of a gang of workmen demands as its object the turning out of a fair amount of good work. Some fill one portion of this demand and others the other portion, but it is only the manager of men who fills both.

Employers are sometimes at fault in demanding from foremen the largest possible amount of work in a given time, always prodding and pushing, grumbling because a job occupied more time than they expected, and picking up every trifling interruption as a deliberate attempt at imposition. If a foreman is honorable and sensitive he will not bear this nagging, and so in shops ruled by such a proprietor changes of foremen are frequent. One such instance occurs to mind, just now, of a proprietor of a very thriving business, requiring the services of nearly a hundred good workmen besides apprentices, who had lost three foremen within two years either by resignation or dismissal. "Can you recommend a good foreman?" he inquired. "You have an excellent man for the place now in your shop," was answered, naming him. "Oh, he'll never do, he's one of the men himself. I don't want a man who is familiar with the workmen; I want a driver, and he ought to be a stranger." The position of foreman in that establishment is periodically vacant, and a stranger who can bring fair recommendations and has the qualifications of a "driver" can generally have assurances of a position, even if he has to wait a short time for his predecessor's shoes. And yet, this proprietor is in no usual sense "a hard man;" he simply has a wrong idea of the duty of a foreman. His ideal foreman is a mechanical blusterer who stirs up cyclones in the shop, produces an atmosphere of general uneasiness, and "makes the men hop round lively," as he once remarked. The workmen make trouble for every new foreman, and his "life is not a happy one."

There are, however, some foremen who are instructors rather than managers of men. Under their rule more time is spent in the details of work, in correcting errors, in "doing over," than should be required to complete the job. The scrap heap under their management grows to enormous proportions; every slight error in work and every slight mistake in apprehension of an order makes another accretion to the growing pile. Under such foremen the workmen never learn economy of time or of material.

A truly capacitated foreman is a possibility, and his portrait is drawn from no fancy sketch. In the establishment where he is a manager a strike has not occurred since it had an existence—twenty-five years. Probably there are many like him, and his portrait may stand for those of others.

Although he is generally as exact as the workmen to the "bell hour," there is no stir among them if he is late and no letting down of attention when he goes out. He assumes a

part of every job and does it, wearing his honorable overalls like his men. He is not afraid of a loss of dignity or a relaxation of authority by addressing his men familiarly. He suffers no diminution of well-earned superiority in asking advice of some of his more experienced men. If one of his men "runs against a snag," he goes at once to his foreman, who either knows what to do, or has some proper and timely suggestion to make. He contrives to have his men interested in the work from incipency to finish, and when one of them shows hearty interest in the work and turns out a good job, he is told of it in plain words that cheer his heart, instead of being rewarded with a grumpy "That'll do."—*Scientific American*.

The Mission Street Railroad, San Francisco, Cal., to Run Cars by Electricity.

THE Mission Street Railroad is about to experiment with electricity as a motive power on their road, and in the course of about a week a car will be run by the new power. Advantage has been taken of the discovery of Faure, the French scientist, with regard to the capacity of electricity for storage. To each car will be attached a dynamo machine, which is usually made use of in the generation of electricity. The machine consists of a cylinder which, being made to revolve rapidly in front of magnets, generates electricity, which is conducted off for use by wires. But the machine can also be used in another way, the process being reversed. If electricity is fed to the machine through the wires, the cylinder revolves. In the first instance, power is converted into electricity, and in the latter electricity is converted into power. The dynamo can thus be used by means of suitable attachments, to give motion to the wheels of a car, the electricity which is fed to it being kept in storage batteries, which occupy but a small space. These batteries are charged at the engine-house, where a steam engine is made to run a dynamo, which generates the electricity.

That cars can be moved by the means described there is little doubt.—*Electrical Review*.

A MECHANICAL writer says: "The best workmen I have ever known in machine shops are those who give a little attention after stopping time, just as a good groom takes the best care of his horse when it is the hardest worked, seeing that it is cared for before he gets his own supper. The result in the one case is that the horse is always fresh and ready for hard work, while the machine is always turning off a good quantity and a good quality of work."

Should this Journal be received by any subscriber who does not want it or beyond the time they intend to pay for it, let them not fail to write us direct to stop it. We will not knowingly send the paper to any one who does not wish it, but if it is continued, through the failure of the subscriber to notify us to discontinue it, we shall positively demand payment for the time it is sent.

School House and Church Architecture. Price \$4.00.

The Present Place of the Plumber.

THE part which plumbers' work has to do in practical sanitation can hardly be overestimated, and yet to a considerable extent it may easily be overlooked. Indeed, it is mostly invisible, it is covered up in our walls, in our ceilings, or under our floors. Hardly anywhere is a pipe to be seen, the object being to keep as much out of sight as possible. Yet it is through these hidden pipes that both water and waste are carried through our houses; even into our sleeping rooms, where during our unconscious hours we are especially liable to be poisoned by noxious gases, and all these water pipes and waste pipes are unavoidably connected more or less closely with the drains, that we all know are vast reservoirs of noxious gases of decomposition, which, if not guarded against, will rise from beneath into our dwellings flooding every room with the breath of the plague. We have new-fangled names for apparatus, and elaborate statements regarding systems which are certainly calculated to mystify, and perhaps are sometimes designed to mislead, rather than to render clear the very simple fact that good material and good craftsmanship are alone needed to secure adequate water service within the house, and make such connections with the main drainage as to effectually prevent offensive smells and the escape of sewer gas into the house, which are the chief objects of the plumbers' art. Cheap work—so-called—really the dearest of all work, inferior craftsmanship and the semi-scientific theories of inferior or untrustworthy architects, self-elected sanitary engineers, and other persons who think things rather than know them, are, I am convinced, at the root of all that is now found defective in the plumbing as well as other bad arrangements in our houses.

It is common to denounce speculative—or as they are called—jerry builders; but, may I be allowed to suggest that, if there were no jerry public there would be no jerry builders? Simplicity of terms as well as of treatment will do more, I think, than anything else can to obtain that reform which the National Health Society and other sanitary associations are demanding in the interests of public health and comfort. These I know are but elementary truths, yet I venture to impress them in the strongest manner upon the attention of this assembly, because my experience tells me that it is from the violation of the first principles of soundness that the public suffer the evils they do from bad plumbers' work in their houses.—*Mr. Shaw to the National Health Society of England*.

PLEASE NOTICE.

The 75-cent edition of the Steel Square and its Uses is OUT OF PRINT. We cannot supply any more, as we have received notice from the publishers that their stock of that edition is completely exhausted. We have a number of the new and enlarged edition, which we will mail direct to any address upon receipt of

ONE DOLLAR.

This edition contains 30 more pages than the first one issued.

Management of Burned Forests.

AT the Forestry Congress in St. Paul, a paper by B. E. Vernon was read on this subject. In the management of a burnt forest, the essayist showed it is necessary to study the influence of the fire on the soil and on the standing timber before deciding upon the treatment. The vitality of the timber left standing may be injured by the scorching flames. In hardwood forests where the reproduction is expected from the stocks, as in the coppice, the reproductive power is injured in proportion to the degree of heat developed by the fire. In pineries, where reproduction can only be expected from the seed, the young seedling falls the first victim to the merciless fire. When the fire kills its original growth or causes its speedy death, the conditions of forest growth are at once changed and those alternations of species occur which are the natural consequences of the change of their conditions. The essayist went on to show how, in the case of a destroyed pine forest, the light-seeded species first takes the place of the old growth. Gradually, however, acorns and nuts will be deposited in the shade of the new growth, and as the light-seeded trees die off, the more valuable trees get a chance to grow, and gradually occupy the lands. This new forest of hardwood trees if protected by fire will long occupy the ground, but the original pine forest will not appear again until the land, long enriched by an annual deposit of leaves, has been again stripped of its trees and mellowed by years of cultivation. The forest fire, then, which destroyed the original pine forest, also destroyed the capacity of the land to reproduce a similar crop of trees for a period which may be set down at from 50 to 100 years.

The essayist showed from this the importance of protecting the forests by dividing them into blocks, for instance, by means of avenues from two to six rods in width. Where the risk of fire is caused by the proximity of a railroad, safety belts along the endangered line are recommended. Where forests have been partially destroyed, various measures are recommended according to the character of the forest. Where the destruction of heavy timber is a total one, the wisest plan is the immediate replanting of the land. Dead trees should not be allowed to remain, as they form the very best opportunities for the development of injurious insects. In forests of deciduous trees, where the heat generally is not as intense as in pine woods, it may be a cheap plan to await a new growth from the stocks and carefully nurse the more valuable species, in time filling up the bare spaces by planting shade-enduring species. In this, as in every other problem of forestry, it is impossible to prescribe any definite rules that will cover all the requirements of particular cases. A thorough elementary knowledge of the conditions of forest growth alone will enable the forester to decide what methods to adopt for the restoration of lost growths and reparation of the damage inflicted by fires on the soil and the forest.—*Lumber World*.

Common Defects in the Sanitary Arrangement of Houses.

THE best plan in the examination of a house is to begin at the top of it, and so we will begin examining a house from the roof, proceeding downward, and in our way I will point out the different mistakes that are likely to be made in the sanitary arrangements in various parts of the house.

The first thing which we must consider is that we have to get rid of the water that falls on the roof. The water from the gutter in front of the house may be disposed of in one of several ways. It may be conducted by a pipe outside of the house down the front into the area; or it may be conducted by a gutter through the roof, or, perhaps, through one of the rooms in the upper story into a gutter, over the middle of the house, between two parts of the roof, and down the middle of the house by a pipe into the drain; or it may be conducted direct from the gutter by a pipe, not outside the house, but inside the house, passing down through one or two stories inside the rooms, perhaps through the best bed-room in front of the house, through the drawing-room, carefully hidden by some casing made to look like an ornament, through the dining-room and kitchen into the drain in the basement. Smells having been perceived in different parts of the rooms, especially in the bed-rooms, various sanitary arrangements may be improved, and even made as perfect as they can be, by a kind of amateur tinkering prevalent nowadays in sanitary matters; and yet this defect, which is so exceedingly serious, which is known to give rise to serious disease, is entirely overlooked—perhaps for years. The same is the case when the rain-water is carried in a gutter through the roof into a gutter between the two roofs in the middle of the house, and down by a rain-water pipe inside the house. In such cases similar disasters may occur.

But there is an additional danger from the fact that these inside gutters are in themselves most pernicious things. Soot and rotten leaves collect in them, and air blows through them into the house; and especially when these gutters are under the floors of bed-rooms, this foul air is often the cause of illnesses which occur in these rooms. Even gutters which are not themselves directly connected with the drains, and which are open at both ends, but in which decayed leaves and soot accumulate and give off foul air into the rooms, may be the cause of sore throats. I have known this to be the case in rain-water gutters, which have been carried inside the house, so that they might not form an unsightly feature outside, and which have passed through the bed-rooms under the windows in a kind of position in which a sink would be. These gutters have been open at both ends, and only 10 or 12 feet long; and yet in such a case I have known illness to occur in these very rooms, which I should never have suspected to be due to these gutters if I had not known in previous cases that illness had arisen from the passage of rain-water gutters through rooms.

The housemaid's sink is often placed in a small closet just under the stairs, without any window or any sort of ventilation whatever (and we know what kind of things are kept in the sink!), so that the housemaid's sink in such a position has not by any means a very savory odor. The housemaid's sink should under no circumstances be in such a position. It should be against an outside wall and have a window. As a rule, the material used for the sink itself is lead—wood lined with lead.

The waste-pipe of the housemaid's sink, as a rule, is connected directly with the trap of the nearest water-closet. There is a grating in the sink, and there is no trap in or under the sink, but the waste-pipe is connected with the trap of the nearest water-closet. This is a bad arrangement. A worse arrangement is for the waste-pipe to be connected with the soil-pipe of the water-closet, in which case some kind of trap is generally placed on the waste-pipe of the sink. This trap is frequently what is called a "bell" trap, and is placed in the sink. The disadvantage of the bell trap is, that when you take the top of it off, you take the bell with it. The bell is the arrangement which is supposed to form the trap, by the edges of it dipping in the water in the iron box; and you see at once, when the bell is removed the trap is removed, and the waste-pipe, wherever it goes, is left wide open, and, if connected with the soil-pipe of the water-closet, the foul air comes up into the house. Very frequently, also, the waste-pipe of the sink has underneath it what is called a D trap. A D trap is a trap which the water passing through it can never clean, so it retains foul water, and, therefore, even under sinks, such traps ought not to be allowed, on account of the foul matters which accumulate in them.

The waste-pipe of the housemaid's sink should not be connected with the water-closet or soil-pipe; neither with any pipe that goes directly into the drain. Its own pipe should not go directly to the drain, which is very frequently the case, but through the wall of the house into an open head or a gully outside. Very frequently the housemaid's sink is supplied with water, not from the cistern on the roof, but from the cistern not only supplying the nearest water-closet, but actually inside the nearest water-closet, in which case, no matter what valves you have, you are supplying your sink with water which is kept in a cistern inside the water-closet, and that is far worse than supplying a sink with water from a cistern which also supplies the water-closet, with a reasonably protecting valve.

Close to the housemaid's sink, and very frequently over it, is the feed cistern to the hot water apparatus, which has also an overflow pipe, and the same remarks refer to this overflow pipe, except that it is a thing much more liable to be overlooked, as to the overflow pipe of the drinking-water cistern.—*Prof. Corfield, in the Sanitary Plumber*.

Lessons on Hand Railing. Price \$5.00.
Stables, Fences, Out Buildings, etc. Price \$2.50.

Importance of Roads.

WE are not aware that any estimate has ever been made of the actual cost of the public roads of the United States, or that the expense of providing them has ever been attempted by any bureau of statistics, but we make the rough estimate that they have cost at least \$700,000,000—probably much more—while unknown millions are annually expended in attempting to keep them in repair. If the money were only well applied, it would be an expenditure of great profit and economy, as everything which the farmer does off his own land is greatly affected by their condition. All his many loads of surplus farm products are drawn over them, and it makes some difference to him and to his horses whether those loads are conveyed easily over hard, smooth surfaces, or dragged through mud and against stones with severe labor to the team, fatigue to the driver, and wear and breakage to the wagon. Every week he and his family, more or less, go to the village for numberless errands, or to church on the Sabbath, and the good or bad condition of the roads seems to affect every fiber, pleasantly or unpleasantly, of their feeling or nervous sensations. On an average, there is at least twenty miles of traveling each week for the members of a single family. It would make a difference of five dollars a week, everything counted, whether this teaming and traveling is done over a nice, comfortable road, or through mud holes, sloughs, ruts, and unbridged streams, or against stones. Five dollars a week amounts to \$250 a year, a snug little sum to tax the farmer with; and when this sum is multiplied by at least five million owners or drivers of horses, carriages, wagons, heavy teams, etc., the aggregate cost would be something over a billion dollars! Does any one say this is too large an estimate? Then proceed in detail and show in what particulars; but do not blindly and ignorantly say it is wrong without careful examination. Suppose, however, we admit that it is double the reality, is not the six hundred millions every year, expended directly or indirectly by our people, worthy of more attention on the part of patriots, statesmen, politicians, office seekers, public-spirited men, writers for newspapers, agricultural journalists, and in fact of every one who passes over a road?

So long as our public highways in most parts of the country are made and repaired with so little interest and so little thought, we must suffer an enormous loss. We would like to ask how many of our readers who drive or ride over the common roads, never see a loose stone, or a fixed stone, to strike, jolt, and batter every passing wheel, or who do not see hundreds of them which might be removed with the expenditure of a small portion of the road tax? How many never saw sods and muck scraped into the road bed, to form a highway or "turn-pike," which would be excellent for corn and potatoes, but which when worked into a mass of mud, or cut into ruts a foot deep, constitute a strange object to be called a "road"? How

many never saw along the roadsides, thrifty patches of thistles, burdocks, mulleins, John's wort, nettles, etc., etc., ready to seed all the neighbors' fields? Until we can find such happy persons in the majority, we hope more attention may be given to correcting these evils, although we would not lessen the praiseworthy attention which is now freely accorded to enterprises and interests of almost infinitely less importance, but good in their small way.

Ancient Tools.

A PAPER that was recently read before a scientific association in England, gives some interesting particulars about tools used by the artisans who worked on the ancient buildings of Egypt, and other moribund civilizations. The subject proved specially valuable in showing how skilled artisans performed their work 4,000 years ago. The great structures whose ruins are scattered all over North Africa and Asia Minor, demonstrate that great artisan and engineering skill must have been exercised in their construction, but when parties interested in mechanical manipulations tried to find out something about the ancient methods of doing work, they were always answered by vague platitudes about lost arts and stupendous mechanical powers which have passed into oblivion. A veil of mystery has always been found a convenient covering for a subject that was not understood. The average literary traveler who helped to make up the tons of books that have been written about Oriental ruins, had not the penetration or the trained skill to reason from the character and marks on work what kind of a tool was employed in fashioning it.

A trained mechanic, Flanders Petrie, happened round Egypt lately, and his common-sense observations and deductions have elucidated many of the mysteries that hung round the tools and methods of ancient workmen. From a careful collection of half-finished articles with the tool marks fresh upon them—and in that dry climate there seems to be no decay in a period of 4,000 years—he proves very conclusively that the hard diorite, basalt, and granite were cut with jewel-pointed tools used in the form of straight and circular saws, solid and tubular drills and graving tools, while the softer stones were picked and brought to true planes by face-plates.

That circular saws were used the proof is quite conclusive, for the recurring, cut circular marks are as distinctly seen on these imperishable stones as are the saw marks from a newly-cut pine plank. This proof of the existence of ancient circular saws is curious, for that form of saw is popularly believed to be of quite modern invention. That another device supposed to be of recent origin was in common use among Pharaoh's workmen is proved by the same authority. We have met several machinists who asserted that they made the first face-plate that ever was used in a machine shop, and we have read of several other parties,

who made the same claims, all within this century. Now this practical antiquary has gone to Egypt and reported that he found the ochre marks on stones made by face-plates that were used by these old-time workmen to bring the surfaces true.

As steel was not in use in these days the cutting points for tools must have been made of diamond or other hard amorphous stone set in a metallic base. The varied forms of specimens of work done show that the principal cutting tools used were long, straight saws, circular disc saws, solid drills, tubular drills, hand grainers, and lathe cutters, all of these being made on the principle of jewel points, while metallic picks, hammers, and chisels were applied where suitable. Many of the tools must have possessed intense rigidity and durability, for fragments of work were shown where the cutting was done very rapidly, one tool sinking into hard granite 1-10" at each revolution. A curiosity in the manner of constructing tubular drills might be worthy of the attention of modern makers of mining machinery. The Egyptians not only set cutting jewels round the edge of the drill tube, as in modern crown drills, but they set them in the sides of the tube both inside and outside. By this means the hole was continually reamed larger by the tool, and the cone turned down smaller as the cutting proceeded, giving the means of withdrawing the tool more readily.

As indications on the work prove that great pressure must have been required to keep the tools cutting the deep grooves they made at every sweep, the inference is that tools which could stand the hard service they were subjected to must have been marvelously well made. Our modern tool-makers give employment to a high degree of mechanical skill, and extended metallurgical knowledge is requisite for the selection of material to make first-class tools. But when we reflect on the difficulties these ancient tool-makers had to surmount, in fastening and retaining stones as cutters on a base of bronze, we can appreciate the perfection their art reached. They probably followed methods of hardening copper alloys which are not known to us and are not discovered by modern metal workers, because the knowledge is not essential, but the real mystery of how clean cutting of hard substances was done in those times lay in the acquired skill of the tool-makers.—*American Machinist*.

PLATE glass was discovered in an accidental way in 1688 by a man named Thevart. It is attributed to the breakage of a utensil containing some of the melted material, a portion of which flowed under a large flagstone, which, when subsequently removed, was found to cover a plate of glass. Thus was suggested the idea of casting glass in plates.

Grimshaw on Saws. Price \$4.00.

Mechanics' Geometry. Price \$5.00.

American House Carpenter. Price \$5.00.

All new subscribers for 1884 will receive the balance of this year free.

The Mechanics' Fair.

FOR neatness of arrangement, and general good order, as shown by exhibitors generally, the Fair of 1883 compares favorably with the best that have been held. Those having goods to display are not satisfied that the old grooves should be used again, but with commendable zeal and interest have studied up new methods of interesting visitors; and the result is shown in the large number of orders given for many of the articles on exhibition. Upon entering the vast building, the fear of a conflagration is greatly modified by the display of

HARKNESS FIRE EXTINGUISHERS.

For which it is claimed that the number on exhibition is sufficient to check any fire that could possibly occur in the building. A peculiarity of the liquid used is that it will not injure the finest fabric. For this reason it is said that many ladies having expensive wardrobes have ordered these machines for private use.

ART GLASS WORKS.

A beautiful arbor, made from specimens of the artistic work of Mr. Mallon, at once arrests the attention of the observer. This is an industry that has been built up on this coast only by the exercise of an indomitable will, aided by a judgment and skill obtained only by years of study. We can commend the work of Mr. M. to those in need of anything in his line.

PACIFIC SAW WORKS.

This is, in our judgment, one of the most attractive features of the Fair. The arrangement of the hundreds of saws is truly artistic. Every kind of saw is represented, from those used by watch-makers to the mulays used by our mill-men. The energy displayed by the proprietors of these works is worthy of emulation by all of our local manufacturers, for it is to our manufactures we must ultimately look for an increase of population. We will send a fine engraving to all correspondents, representing the various saws manufactured by this Pioneer Company.

JUDSON NAIL WORKS.

This company is fortunate in having the prestige of success from the start. The superior quality of the nails made is already having the effect of diminishing the supply sent from the East. It is only a question of time when these works will be able to supply the entire Pacific Coast with all kinds of nails, spikes, etc.

IRON MANTELS—ARTISTIC TILES.

Montague & Co., as usual, are ahead of all competitors in the display of the above specialties. The mantels on exhibition are much admired for their beauty, as well as cheapness. They are made in imitation of ancient and modern marbles, and woods of all kinds, including laurel and black walnut, rosewood, etc. This firm also imports, direct from Stoke-upon-Trent, all kinds and patterns of encaustic, plain, art-painted, glazed, and majolica tiles.

BROWELL'S CHIMNEYS.

Mr. Browell is fortunate in having secured a place for the display of his chimneys where one cannot fail to see them. He presents a large variety of patent chimneys and ornamental tops. A peculiar feature of these is the easy manner in which they can be attached to a house, and the bands are so fixed that in case of the settling of the house no possible damage can be done to the chimney. Mr. B. also keeps on hand a full supply of sewer-pipe, of all sizes.

ORNAMENTAL NEWELL POSTS.

Mr. P. B. McKay makes a specialty of hardwood work, and displays a beautiful assortment of Newell posts, plain, fancy, and ornamental; also, baluster-rails, moldings, and all kinds of inside finish. Mr. McKay's long experience enables him to equal, if not surpass, any one in this same line of goods.

WEED & KINGWELL.

A beautiful display of bells, valves, lubricators, etc., is made by this firm. They have taken the lead in the manufacture of rich-toned bells, and orders are weekly received from all parts of the Pacific Slope. We understand that this firm is prepared to furnish chimneys of bells for the use of churches. They also manufacture the celebrated Gordon valve, particularly adapted for outside garden hose and fire-plugs. Added to its superiority is the fact that it is much cheaper than the ordinary hose-bib.

RADIATORS AND FOLDING GATES.

Mr. Harvey has been the means of adding a new industry on this coast. His folding and extension gates are admired by all who stop to see the practical working of these safeguards against burglars. They can be fitted to a window in such a manner that in day-time they cannot be seen, and at night, when in position, they are an effectual safeguard against the opening of windows from the outside. They are also particularly applicable to store-fronts. Mr. H.'s radiators are in use all over this coast, and give general satisfaction.

HENRICKSEN'S SAFETY CLUTCH.

These clutches are now recognized as the best in use. It is impossible for the cage to fall, from the breaking of the cable, when this appliance is attached to the elevator. They are automatic in their action, and are simply the exponent of a natural law.

In our next issue we will notice several others of the more conspicuous exhibits.

Brick Mason—Separate Contracts.

THE brick masons in San Francisco have perfected a society organization, mainly for the purpose of protecting themselves against losses by sub-contracting work. They neither propose nor contemplate anything in reference to prices or labor, leaving these to be regulated by demand and supply, but they request of owners and architects that all jobs of mason work—which generally includes grading and drain pipe work—which amount to more than

\$300, shall be let by separate contract to masons, irrespective of all other contracts. The movement is all the more worthy of consideration and favor because it emanates with the very best and most responsible of our master masons, who are actuated by no motive designed in effect to advance prices, or in any way abridge advantages to those contemplating the erection of buildings.

The principal argument used in support of the movement is the repeated failure of original contractors, and the great uncertainty of pay under the sub-contract rule. It is well known in building circles that very large amounts of money have from time to time been lost by sub-contractors through the defaults of those holding original contracts; and the present movement on the part of the master masons is to secure themselves against the uncertainties attending sub-contract work.

All new subscribers for 1884 will receive the balance of this year free.

Detail Cottage Architecture. Price \$10.00

PATENTS AND INVENTIONS.

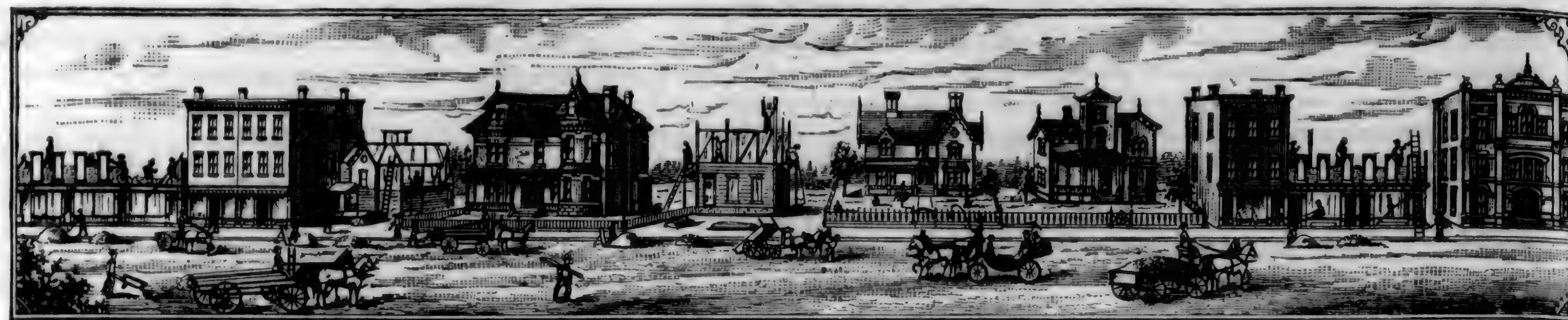
List of U. S. Patents for Pacific Coast Inventors.

[From the official list of U. S. Patents, in DEWEY & CO.'S SCIENTIFIC PRESS PATENT AGENCY, 252 Market Street, S. F.]

FOR WEEK ENDING SEPTEMBER 25, 1883.

- 285,541.—AGRICULTURAL BOILER—S. N. Alford, Portland, Or.
- 285,462.—REVERBERATORY FURNACE—J. H. Canavan, Globe, A. T.
- 285,463.—PLOW—Jas. Clausen, San Luis Obispo, Cal.
- 285,465.—LUBRICATOR—M. L. Conway, S. F.
- 285,740.—FIRE ESCAPE—E. C. Eyl, Jefferson City, M. T.
- 285,481.—MOLD-BOARD FOR SIDE-HILL PLOWS—Paul Gregory, Davenport's Landing, Cal.
- 285,487.—APPARATUS FOR REMOVING SAND BARS—J. H. Huffer, Jacksonville, Or.
- 285,753.—NASAL INHALER AND INVIGORATOR—Jas. Keck, Portland, Or.
- 285,755.—SAMPLE EXHIBITOR FOR WALL PAPERS—Jas. E. Kidd, Stockton, Cal.
- 285,757.—SLATE PENCIL SHARPENER—W. P. Kirkland, S. F.
- 285,422.—THRASHING AND CLOVER-HULLING MACHINE—A. W. Lockhart, Sacramento, Cal.
- 285,495.—CHECK BOX—David Lubin, Sacramento, Cal.
- 285,499.—STATION INDICATOR—Thos. Melrose, S. F.
- 285,508.—AMALGAMATING ORES AND SAND CONTAINING GOLD—A. B. Paul, S. F.
- 285,514.—CABLE RAILWAY—Henry Root, S. F.
- 285,520.—APPARATUS FOR EXTINGUISHING FIRES ON VESSELS—A. F. Spawn, Oakland, Cal.
- 285,700.—SAND-GUARD FOR RAILWAY—T. W. Stapleton, Portland, Or.
- 285,530.—COMBINED CANE AND FAN—Wm. Verbeck, S. F.
- 285,720.—HEADER—Jos. H. Winn, S. F.
- 285,601.—BEVEL SQUARE—M. Farley, Portland, Or.
- 10,606.—TRADE MARK—J. R. Williams, Stockton, Cal.
- 3,547.—LABEL—M. A. Scott, Livermore, Cal.

NOTE.—Copies of U. S. and F. rein 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.



BUILDING INTELLIGENCE.

Although our report is not as large as usual, it must not be inferred that there is a cessation of building interests. On the contrary, it is but seldom, at this season of the year, that so many buildings are seen in process of erection. One of the principal reasons for our slack report, is the absence of our regular news gatherers. During the past month they have been on a trip through the northern and southern sections of our State, and Oregon; and the good results achieved by them will be found in another part of this issue. The following list embraces all of the work in the different architects' offices, and a few others, the owners of which have dispensed with professional services:

SAN FRANCISCO.
 Contracts for Dunham & Carrigan's building, mentioned in our last report, have been awarded as follows:
 A. — Wright & Sanders.
 C. — J. Hughes, brickwork; T. H. Day, carpenter. \$150,000.
 Market, corner Fremont. Alterations.
 O. — Lachman.
 A. — Wright & Sanders.
 C. — Haft. \$7,500.
 Mission, x Sixteenth and Seventeenth. Two-story and basement frame.
 O. — Dr. Wagner.
 C. — Newsom Bros. \$8,000.
 Mission, x Nineteenth and Twentieth. Three-story frame.
 O. — A. O. U. W.
 A. — G. A. Bordwell.
 C. — Gray & Stover. \$6,800.
 Gough, x Fulton and McAllister. Two three-story frame.
 O. — Robert Gordon.
 A. — G. E. Voelkel.
 C. — J. H. McKay. \$13,000.
 Fulton, No. 414. Repairs.
 O. — R. Gordon.
 A. — G. E. Voelkel.
 C. — Hutchins & McLean. \$1,000.
 Jones, x Clay and Sacramento. Two-story frame.
 O. — A. W. Foster.
 A. — Curtis & Be. nett.
 C. — R. McCann. \$8,500.
 Guerrero, x Twentieth and Liberty. Two two-story frame.
 O. — G. E. Turner.
 A. — Newsom Bros.
 C. — Moore Bros. \$10,000.
 Filbert, corner Buchanan. One-story frame.
 O. — Mrs. J. Wright.
 A. — Townsend & Wyneken.
 C. — Orr. \$1,100.
 Haight, near Scott. One-story frame.
 O. — B. — P. Connor. \$2,200.
 Point Lobos Road, near Ninth Avenue. One-story frame.
 O. — G. Schmeiser.
 A. — Newsom Bros.
 C. — R. P. Traxler. \$2,300.
 Union, nr. Hyde. Two-story frame.
 O. — Mrs. White.
 C. — B. F. Ellis. \$2,500.

Pacific Ave., x Polk and Larkin. Two-story frame.
 O. — George D. Bliss.
 A. — T. J. Welsh.
 C. — J. Blake. \$7,000.
 Linden Ave., x Octavia and Laguna. One-story frame.
 O. — D. J. Oliver.
 A. — T. J. Welsh.
 C. — P. Laherty. \$2,300.
 Potrero. Two-story frame.
 O. — Carroll Bros.
 A. — T. J. Welsh.
 C. — J. McGeary. \$4,500.

Lombard, x Taylor and Jones. Two-story frame.
 O. — D. W. Tietzer.
 A. — Gellfuss.
 C. — B. Dryer. \$5,000.
 Lombard, x Taylor and Jones. Two-story frame.
 O. — Ed. Rotger.
 A. — Gellfuss.
 C. — B. Dryer. \$4,400.
 Post, x Stockton and Powell. Additions.
 O. — Verein Eintracht.
 A. — Gellfuss.
 C. — W. Plums. \$6,000.

WOODLAND.
 One-story frame.
 O. — C. Voigt.
 C. — Jackson. \$1,200.
 One-story frame.
 O. — J. Borach.
 B. — Gleason & White. Days' work. \$800.
 Improvements on hotel.
 O. — L. Knight.

MISCELLANEOUS.
 Santa Rosa. Three-story brick; O. — County of Sonoma. A. — Curtis & Bennett; C. — Carl & Croly. \$80,000.
 San Rafael. Two-story frame; O. — Frank Zook; A. — Curtis & Bennett. C. — I. Shaver. \$3,500. Two-story and attic frame; O. — L. Schluss; A. — Wright & Sanders; C. — J. Robertson. \$25,000. Two-story frame; O. — Mrs. Butterworth. A. — W. D. Mitchell; C. — J. A. Jackson. \$3,700.
 San Jose. Julian, x Second and Third; two-story frame. B. — B. — O. — A. Schoenheit; A. — Theo. Lenzen; C. — W. S. Buyles. \$7,000. Fourth, cor. Williams; two-story frame; O. — Mrs. D. Murphy; A. — Theo. Lenzen; Days' work; \$7,000.

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 " " " 25 50
 " 71 to 80 " " " 26 50
 Refuse Rough. 18 50
 Common Rough, sized with planer—\$2 additional on above rates, per M feet.
 No. 1 Flooring, 8 inches and over, " 33 50
 " 4 " and under, and 1 1/2 x 4 and 1 1/2 x 6 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

Two-story frame.
 O. — Fred Market. Days' work. \$1,000.
Near Town. Two-story frame.
 O. — Mrs. Miller. B. — S. Sibley. Days' work. \$1,000.
Near Town. One-story frame.
 O. — D. A. Jackson. B. — Gilbert & Son. Days' work. \$2,300.
Frame building.
 O. — John Winters. B. — Mr. W. Winne. \$2,300.
Additions.
 O. — J. Roth. Days' work.

BERKELEY.

One-story frame.
 O. — Brooks. C. — Embury. \$1,400.
Two-story frame.
 O. — Howells. C. — Lukes. \$3,500.
One-story frame.
 O. — Lingard. C. — Willard. \$1,000.
One and one-half-story frame.
 O. — Slate. C. — Broad. \$2,000.
Congregational church.
 A. — Clinton Day. \$12,500.
Two-story frame.
 O. — Maxwell. A. — C. Day. C. — Smilie. \$8,000.

A VERY modern discovery has thrown new light upon one of the most remarkable legends of the Middle Ages. Most reading people now know something about the ptomaines, the intensely poisonous alkaloids which have recently been isolated from the corrupt juices of a decomposing body, and, although the first announcement of their discovery was received with incredulity, and almost derision, are now recognized as distinct substances, existing in several varieties. Further research has shown that the new alkaloids are capable of entering into combination with other substances, yielding stable compounds having new properties, and it is found that the ordinary white arsenic easily combines with many of them, to form volatile liquids of frightfully poisonous character. The singular coincidence between this discovery and the history of the sixteenth century lies in the fact that one of the many traditions respecting the *aqua Tophana* of the Italian poisoners, that deadly drug which destroyed life instantly, and without fear of detection, relates that it was prepared by sprinkling white arsenic upon pieces of pork, and collecting the liquids which drained from them, adding subsequently a vegetable infusion. The first part of the process is exactly the same as that now found to be the easiest mode of preparing the arsenical ptomaines, and it seems altogether probable that experience may have led the refined Italian poisoners, who, as the stories go, could destroy their victims by the perfume of a bouquet, to the secret concoction of the very substances which beneficent science is now adding to the list of well-known, and perhaps medicinal drugs.—*The American Architect and Building News.*

N. C. WALTON,
 Asphaltum and Asbestos Roofing,
 219 MISSION STREET,
 SAN FRANCISCO, CAL.

The California Architect and Building News.

VOLUME IV.
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SPECIAL NOTICE TO SUBSCRIBERS.

It is our intention, in the future, to have all new subscriptions begin either with the January or July numbers. In order to have a uniform time with subscribers now on our books, credit will be given to those whose subscriptions fall due between this issue and the 1st of January, with the intervening months, so that by sending \$2.00 NOW, you will receive a full receipt for 1884. All new subscribers will receive the balance of this year free.

Holding off for Lower Prices.

MANY owners are postponing the erection of contemplated improvements, having in view the idea that, owing to the advent of the winter season, the price of labor will be reduced; also, that materials of various kinds, from a cessation of building operations, will accumulate on the dealers' hands, and the latter will be only too glad to make a discount for cash.

We can assure all such, by positive information secured from lumber dealers, hardware, paint, glass, and other material men, that there is not the least chance of a fall in prices of the various materials necessary to erect and complete a building. In fact, everything tends to show that prices will be stiff from this onward, for some time to come.

We can positively say that lumber will not in the near future be any cheaper than it now is. During the past month it has been raised in price, and we have no doubt that as soon as the dear public gets used to this advance, another turn of the screw will be given, and a dollar or two be added to the already exorbitant price; and this in the face of the fact that some of the lumber dealers are complaining that their money is lying idle in the bank, and no one is willing to use it and pay a reasonable interest thereon.

The price of hardware is regulated by the Eastern market. We doubt though, even if a reduction be made in the manufacturing districts, that a corresponding price will be adopted here. The truth is that all over the State building operations were never in a more progressive state than at the present time. The demand for hardware has been such that no old stock of any kind is on the dealers' hands, and consequently there are no old patterns to work off at nominal prices and thus weaken the general market. There is not a firm of prominence in the city but takes pride in showing their customers complete new patterns in every branch of hardware.

The manufacture of paint on this coast has almost stopped shipments from the East, and as the proprietors of the manufactories are giving—in fact, always have done so—the best material at the lowest cost, no lessening of price in this commodity is to be apprehended.

The variations in the price of glass doors, windows, etc., are but very small, with the chances in favor of a raise.

Plumbing, and materials used in work in connection therewith, are as cheap now as they will be for some time to come. Under the operation of the new plumbing law, the price of plumbing has been materially advanced.

Owing to the great demand for skilled labor in every branch of mechanical work, no reduction in the price of a day's labor may be looked for. On the contrary, prices are apt to be advanced, and we have no hesitation in saying that carpenters, masons, plasterers, etc., will obtain higher wages next year than they have received during the one now about closing.

Bricks have advanced in price, and, with a strong combination holding all that can be manufactured, no decline need be looked for in this direction.

It will thus be seen that those who intend to build are more likely to have their work done cheaper at the present time than they can next year.

Another fact should be borne in mind. Each succeeding year witnesses a more general introduction of the old-fashioned moving day, and tenants prefer to move into a new house as long as it suits their wants. Owners consequently have none too much time in which to complete a building by the first of April.

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 now printed. The charge is but 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.

San Francisco Chapter, American Institute of Architects.

THE regular monthly meeting of the Chapter was held on November 2d. In the absence of the President, H. C. Macy occupied the chair.

The teachers in charge of the various classes instituted by the Chapter reported as follows: During the month a class in mathematics was organized under the direction of J. Gash. The classes in modeling, perspective, and flat drawing were being better patronized, and the pupils showed much ambition to excel.

After discussion it was resolved that at least one member of a firm must belong to the Chapter to enable the students connected with the office to take advantage of the lessons given in the different classes.

J. E. Wolfe, of Committee on Plumbing, tendered his resignation, owing to a severe spell of sickness, which had rendered him unable to attend to the necessary duties. On motion, the resignation of the entire committee was accepted, and the President appointed the following Fellows to complete the work of

the Plumbing Committee—Messrs. Henriksen, Welsh, and Moore.

John Hall and W. Copeland were elected members as Fellows. The application of R. C. Ball was laid over till next meeting.

A communication was received from the Garland Trap Manufacturing Company, calling attention to the virtues of the traps as a sewer gas protector. A sample of the trap accompanied the communication. Placed on file.

Committee on procuring a seal for the use of the Chapter reported that they had concluded to adopt the seal used by the Association of Architects, formed some years ago.

The money premiums offered by the Chapter for the best design for seal, were to be awarded to the pupil presenting the best sketch in architectural drawing.

Trustees were authorized to procure a seal by the time of next meeting.

The following report was presented by the committee appointed to consider the proposal made by the Masons and Builders Association at the last meeting of this Chapter:—

To the San Francisco Chapter of the American Institute of Architects:—

GENTLEMEN: Your Committee appointed to consider the resolution presented to this Chapter in its October session, by the Master Masons, in reference to its segregation of all mason's work amounting to more than \$300, have carefully considered the matter, and respectfully report in favor of said resolution. Respectfully submitted.

H. C. MACY,
THOS. J. WELSH,
J. GASH.

San Francisco, November 2, 1883.

The report caused considerable discussion. Objection was raised that the amount specified, \$300, was too small for a separate contract. The report was finally laid on the table, with the understanding that it could be taken up at any time the Chapter may see fit. Adjourned.

Church Building an Index to Prosperity.

ALMOST a true index to the prosperity of any State may be found in the number of its churches and schools, and we regard the establishment of the former in so many different places as a better criterion to judge by than the latter. In villages of only twenty or thirty houses, a school house is always to be found. In the majority of small communities, the school house is used as a church, exhibition room, etc. Every little entertainment is given in the village school house. When a portion of these little communities come together and resolve to build a church, or meeting-house, it is always an evidence of prosperity, for without good crops of fruit or cereals, the farmer would not be in a condition to spare a portion of his earnings for something that could be put off a little longer, and unless the village blacksmith, mechanic, and store-keepers were doing well, they could not spare money as long as the school house would do.

It is a notable fact that the founders of all the new towns south of Los Angeles—and

there are dozens of them—will, in their prospectus, in large letters, proclaim the fact that the place is to be blessed with free schools and churches, the latter word generally in large type. And it seems to be a fact that the prosperity of any community depends greatly on the class that are generally found on one day of the week in their places in the country meeting-house. We do not remember of any time in the history of our State when so many small churches were in process of erection as at present. Even in some of our almost neglected mining towns, there have been enough good folks combine together to form a congregation, and take measures to erect a place of worship. This fact proves another thing, and that is, since the decadence of mining, the ground has been found admirably adapted to the raising of fruit, and the moment the farming element predominates, churches and schools are found a necessity.

The Master Masons' Resolution.

As heretofore announced the Master Brick Masons have banded together in an organization for mutual protection, and by resolution declared their intention to maintain the right of original contracts on all jobs of mason work costing more than \$300. Said resolution was presented to the Chapter of Architects at its October session, and placed in the hands of a committee, who, at the meeting held on the 2d inst., reported favorably upon the petition. After a lengthy debate it was resolved to lay the subject matter on the table, etc., mainly upon the ground that by the Chapter favoring and endorsing the action of the masons, scores of other trades, —millmen, plumbers, painters, plasterers, tinsmiths, roofers, sewer-layers, graders, etc., etc.,—might, with equal propriety, set up similar claims and an indorsement of the Chapter, thus involving the Chapter in an almost endless series of contract issues.

The adoption of the resolution and the organization of the Masons' Society presupposes a reason for such action. This is found in the simple fact that sub-contractors in all the various branches of building operations have, during the past thirty years, been subjected to repeated and sometimes ruinous losses through the irresponsibility and defaults of original contractors. In a very large number of such cases the defaults have amounted to downright business salaries, while others have been the result of incompetent men undertaking work far below prices sufficient to enable the payment of actual costs. It is not therefore to be wondered at that the masons have made the move they have, and we trust that they will so thoroughly organize and co-operate as one man, that neither designing rogues nor men incapable of estimating true values of things to be done, will be able to cheat and defraud better men of their rights.

In behalf of the few worthy and responsible contractors (carpenters), it is scarcely necessary to say a word. They stand above reproach; and if buildings were never let to others than our first-class men there would have been no

necessity for any masons' organization. The brick masons nor any other branch care an iota who they work for so long as payment is assured. But in view of the fact that uncertainty of pay in full surrounds a very large proportion of the building contracts let in San Francisco, there should be no surprise felt that sub-contractors should seek protection.

The Pacific States Historian.

HUBERT H. BANCROFT was born at Granville, Ohio, in 1832. His parents were from New England. At the age of sixteen Mr. Bancroft entered the bookstore, in Buffalo, of his brother-in-law, George H. Derby, who, in 1852, sent him to California with a stock of books and stationery. Mr. Derby died before the goods reached San Francisco; but true to the original purpose, Mr. Bancroft, in 1856, opened in a modest way the establishment which in less than thirty years was one of the largest of the kind in the world. Shortly after beginning business he began collecting material for a history of the Pacific States, by which term is signified the western half of North America, from Alaska to Panama, including all of Central America and Mexico. After gathering all that America would yield he several times visited Europe, always with marked success, until his collection numbered 35,000 volumes. Then he erected a brick building specially for his library on Valencia Street, San Francisco.

But long before this he began to write. He studied hard and wrote diligently. As preliminary to his historical series, in 1875 he published the "Native Races of the Pacific States," in five volumes, which was received with universal commendation throughout the world. The most eminent scholars of Europe and America were lavish in their praise of it. Then came the "History of the Pacific States," which is indeed a series of histories, altogether covering the entire coast, one twelfth of the earth's surface, and probably the greatest work of the kind ever undertaken by mortal man.

In all there are to be thirty-nine volumes. Volume XI. has just been printed. They are all uniform in size and binding. Any information in regard to the above can be had by addressing the office of this Journal.

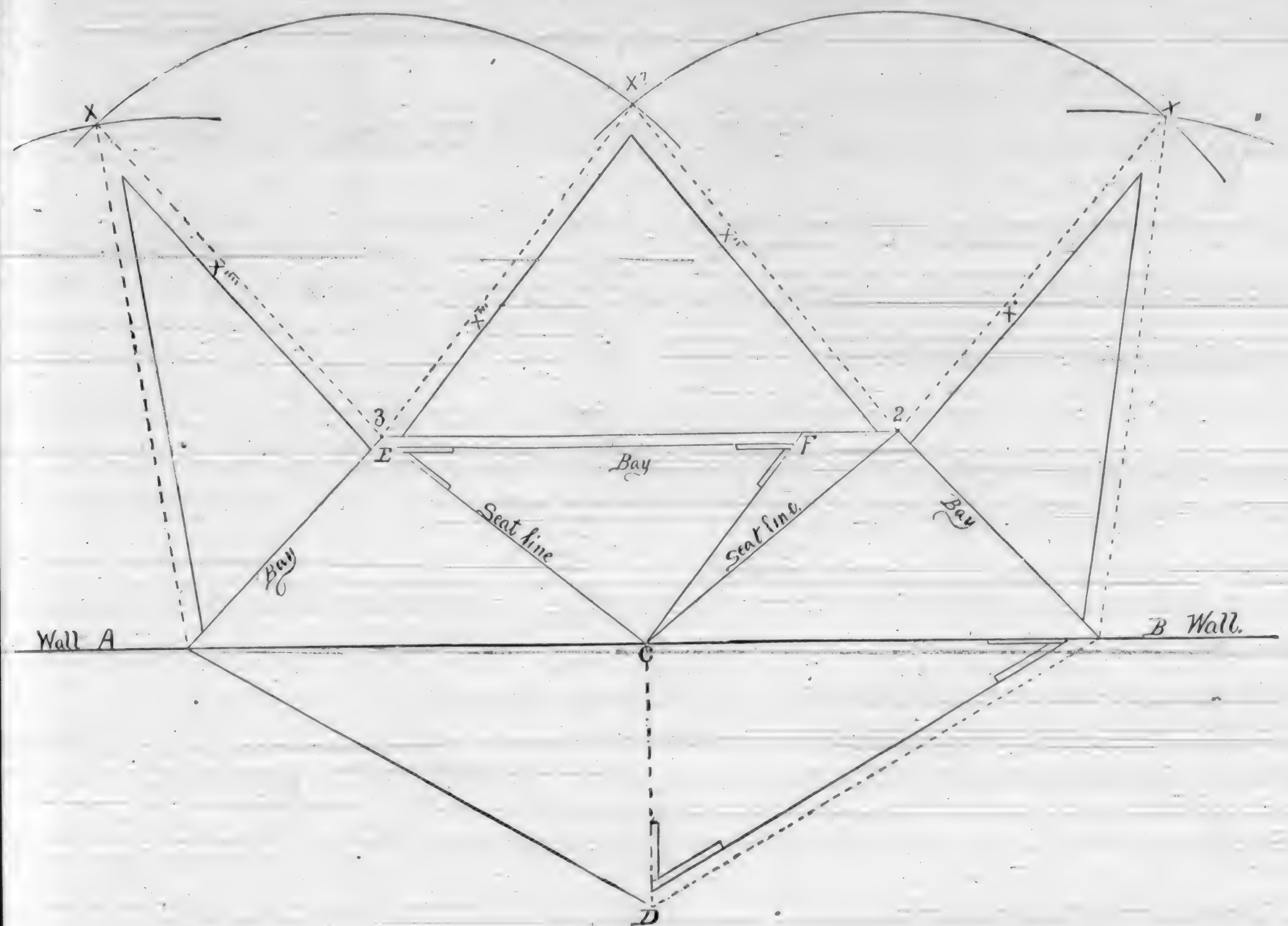
BUILDING SUPERINTENDENCE.

A Manual for Young Architects, Students, and others interested in Building Operations as carried on at the present day.

WE received a copy of the above work from the Publishers, J. R. Osgood & Co., too late for extended notice in this issue. From a hasty perusal, we conclude that young architects, as well as those persons not of the profession who are occasionally called upon to direct building operations, will be greatly benefited by a careful study of this work. Its author is T. M. Clark, well known to many of our readers.

We will send a copy of the above work to any address upon receipt of the price, \$4.00.

"Vodge's Architect and Builder's Pocket Companion and Price Book Edition of 1883," revised and enlarged, \$2.00.



A GRAPHIC DESCRIPTION, ILLUSTRATING THE METHOD OF STANDING THE CUTS OF THE HIPs OF BAY WINDOWS OVER GROUND PLAN IN POSITION. (SEE ABOVE DIAGRAM.)

A B is the wall line; A 3 2 B is the ground plan; C D is the elevation; C B, C 2, and C 3 are seat lines; square from C 3 seat line makes C F equal elevation; then F E is the length and cut that will correctly stand over seat line C E. Draw a line D to B, then take the distance D B in the compass, stand on the angle B, draw a curve as x; now don't change distance you hold in your compass, but stand in angle A, draw another curve x; now set the compass to the distance already found, namely, E F, and stand with compass on angle 2, draw a curve cutting right and left, as x x'; stand on angle 3 with same distance as from angle 2, and draw curve cutting x x'; draw lines as shown, A x, x x', 3, 3 x', x' 2, 2 x, x B; now commence to cut along the dotted lines as shown, and hinge from B to 2, and from 2 to 3, and from 3 to A, and from C to B; fold up and they will stand over ground plan in position. M. J. MARION.

We have dotted the lines as shown, to illustrate the value of models. Take a sharp knife and cut the paper along the dotted lines; fold up the parts separated and the practical

working of the above problem will be at once apparent. We would advise our readers, however, to make the diagram on a piece of card board, following the explanation closely, thus saving the above for future reference.

Mr. M. J. Marion, the author of the above neat study, has decided to remain for awhile in this city. He has in his possession testimonials from some of the most celebrated architects, mechanical engineers, and surveyors in the United States. His system of teaching lines is strictly original with himself. For the present he can be found at 631 Sacramento Street. Draughtsmen, students, builders, etc., would do well to engage his services.

Building.

WE have received a copy of the illustrated edition of *Building*. It contains nineteen selections from foreign architectural journals. The purpose of this edition is to give selections from leading papers of Europe. The editor naively remarks, "We have ordered every journal of value published in England or on the Continent." The best of the ideas culled from these will be given in *Building*. Terms, \$5.00 per year. Orders received at this office.

Plaster and Plastering—How to Make and How to Use It.

A new work, and by far the best yet brought to our notice. It is a complete guide for the plasterer in the preparation and application of all kinds of plaster, stucco cement, lime, etc., with useful and practical information on the chemistry, qualities and uses of the various kinds of limes and cements, together with rules for measuring, computing and valuing plaster and stucco work.

Price, Postpaid, \$1.00.

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P. H. JACKSON,
Attorney for Mrs. E. A. Hyatt.

P. H. JACKSON & CO.,
No. 2 California Street and 231 First St., S. F.

Architecture of Country Houses.

BY A. CURTIS BOND.

In this letter I have shown a double country house with plans, and for the information of our architect friends, or those who would like to put the design into actual use, I propose to give the specifications. The building, as will be seen, is frame, and combines two dwellings under one roof, and has recently been put up in the suburbs of the city at a cost of \$1,600.

The architect, Mr. A. F. W. Leslie, thus writes:—

The main house is 27 feet deep, and 48 feet front, with an extension 13x30 feet. Cellar 7 feet high. First story 9 feet 2 inches; all the measurements to be between timbers.

All frame timbers to be of first quality, and all as well seasoned as can be had. All timbers for joiners' work to be free from loose or black knots, and well seasoned.

SIZE AND KIND OF TIMBER.

Sills 2x8, posts 4x8, plates 2x6, first and second story joists 2x10. All joists supporting partition to be 3x4. Rafters 2x5.

EXTERIOR

To be first covered with hemlock or spruce, well nailed, laid over diagonally, then with sheath paper, then with first-quality pine beveled clap-boards not over six inches wide, and to lap not less than $\frac{1}{4}$ of an inch. Corner-board $1\frac{1}{2}$ x4 inches, and $1\frac{1}{2}$ inch, $\frac{1}{4}$ round in angle, well nailed. Water-table $1\frac{1}{2}$ x6 inches, and beveled on top with lip. Window and door casing outside to be $1\frac{1}{2}$ x4 inches, and according to scale drawing shown herewith. (See illustration.)

ROOFS.

First covered with good hemlock boards, then with sheathing-paper, and then with good blue slates, with chipped corner ridges to be covered with tin and well flashed around chimneys in good, workmanlike manner; valley to be well lined in workmanlike manner with charcoal tin. Gutters to be framed as per scale drawings, and lined with best charcoal tin and well soldered. Roof of piazza and bay window to be finished as main roof.

PIAZZA.

Build piazza as shown on plan. Rear platform at kitchen door to be supported by 5x5 inch chestnut posts, extending high enough to support a plain hand-rail finished with cross supports, made box-shaped, with beveled edges. Steps $1\frac{1}{4}$ inches, well-secured stringers $1\frac{1}{4}$ inches, risers $\frac{3}{8}$ of an inch, all finished in a neat manner.

CASINGS.

All inside door and window casings to be $\frac{3}{8}$ x6 inches, with cove and berth; base to be 6 inches high. All to be finished with a neat moulding of any pattern.

DOORS.

All doors, except outside and sliding-doors, to be $1\frac{1}{2}$ inch thick, moulded on both sides, except closet doors, which shall be moulded on room side only. Front and sliding-doors to be $1\frac{1}{2}$ inch thick, with raised mouldings. Front door to be hung with 4x4 inch bronze

bolt. Sliding-door to be fitted with track and rollers. Suitable locks on all doors, with porcelain knobs, except front door, which must have bronze knob.

WINDOWS AND BLINDS.

All windows to be glazed with second-quality French glass, except cellar window, which must be American make. All windows to be hung by cord and weight, and good sash fastenings. Rolling slat blinds on all windows, with good trimmings. Cellar window to be hung with button and good hook.

STAIRS

To be as shown on plan, with a 7-inch Newel, 4-inch moulded rail, $1\frac{1}{4}$ -inch baluster, all of walnut, neatly and strongly fitted up. Box stairs leading to cellar.

FENCE.

Build fence around entire lot—as may be selected.

MANTELS.

Make neat wooden mantels in kitchen, dining-room, and chamber, to cost not less than \$10.00 each. One slate or marble mantel in each parlor, to cost not less than \$20.00 each, all set.

PLUMBING.

Iron sink, porcelain-lined, 18x30 inches, to be fitted up in kitchen where shown on plan, ceiled up and small door underneath; fitted with tin waste-pipe to connect with drain. Sink fitted with a pump with suction-pipe leading to the bottom of the cistern.

PAINTING.

All work usually painted should have two good coats of best white lead and oil, and of such color as may be selected.

MASONRY.

Masons to excavate for cellar, privy, and cistern, and earth deposition to grade. Foundation to be laid up of stone to within 6 inches of grade, balance 8 inches built wall, a good 10-inch footing cover to start with below cellar bottom. Chimney as shown on plan, carried up to roof with common brick, and topped out with good quality face brick, all to be well plastered from top to bottom.

PLASTERING.

All to be lathed with good spruce laths, then plastered with two good coats, well troweled, to make a good job. Parlor and dining-room and front hall to be hard-finished, and a neat cornice and center-piece in each parlor.

Build cistern and privy sink where directed, in a good, workmanlike manner.

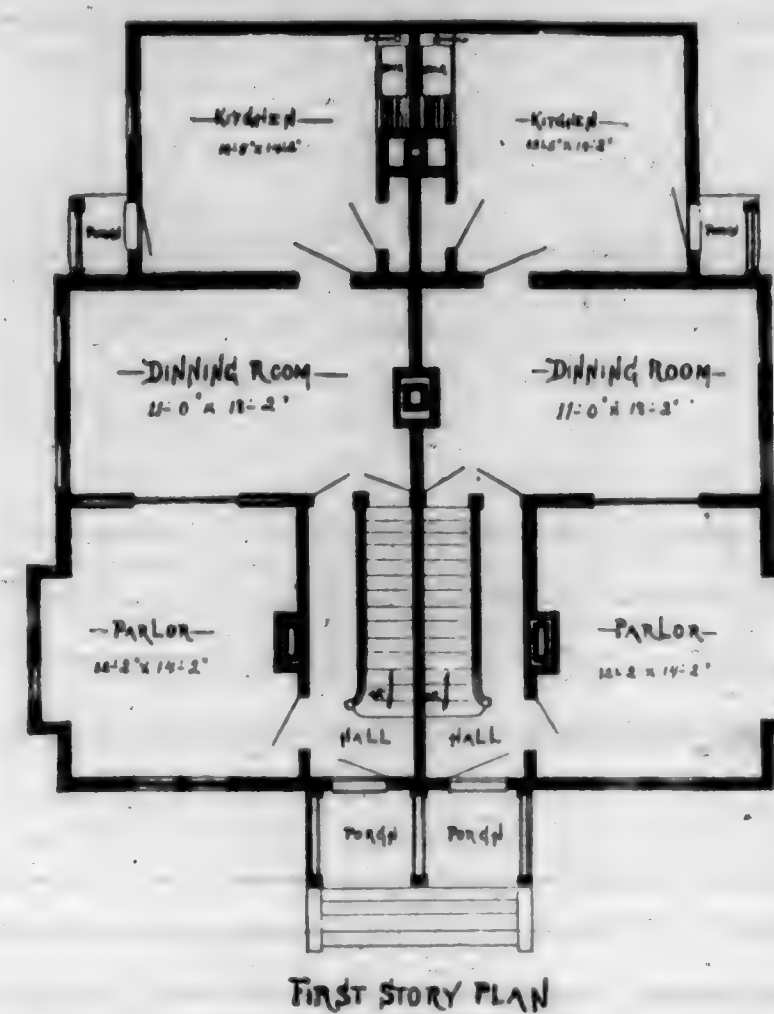
All necessary culture and all carpenter work described, to be done in a neat manner, and all defects rectified and left completed.

The materials all are to be of the best of their several kinds, and all work herein specified, to be done in the best and most workmanlike manner, and finished throughout.

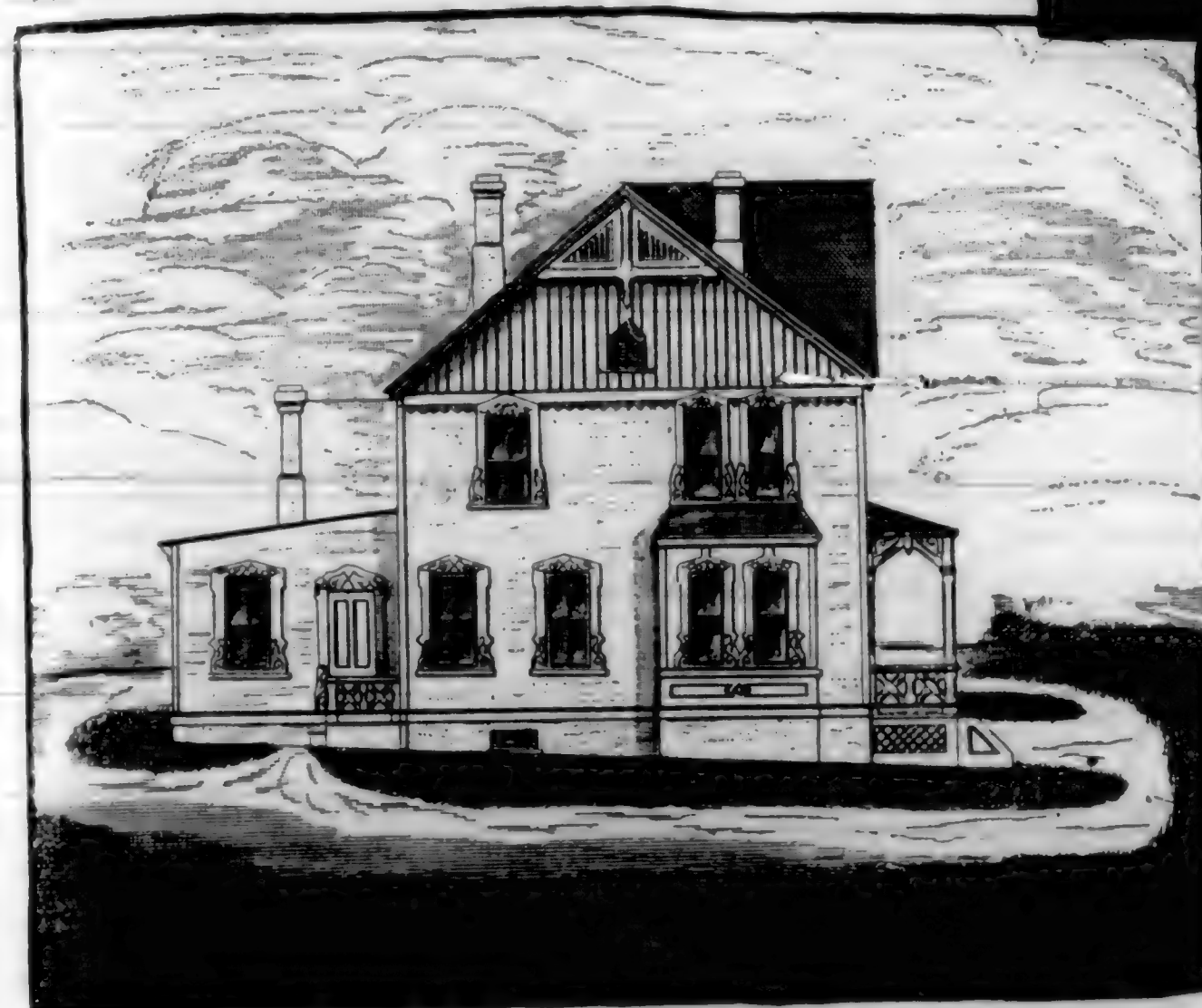
The common use here of shingles in house-building has led to other means of coloring than that of paint. Staining the exterior is often adopted, although the stain is, in itself, less durable than paint, for out of door work,

although the action of the weather washes out the color in some degree, and has the effect of softening the tints and blending them harmoniously together. These softened and blended effects have a charm in the diversity of shades, while painting has a monotonous appearance. A more weathered look is given to the shingle work, which much enhances the picturesque effect. The best mode of applying the stain is by using turpentine or oil as a medium. The mixture of color and oil, says a writer, should be thinned with considerable turpentine, so that it will strike in the wood. The surface afterwards should receive two coats of oil. Or, the stain may be applied with turpentine, or by adding the oil in separate coats, to preserve the color. Vinegar is sometimes used as a vehicle, and with success. The aftercoats of oil are indispensable to a permanent application, and two coats of oil on the top of the stain should be used. Other modes of staining may be used. The natural color of the shingles is sometimes sufficient, and in this case they are often simply dipped into oil before fixing, or a little color may be added to the oil. The California red-wood is a warm and agreeable material, needing only oiling to bring out the color or heighten the tone. Varnish is sometimes applied to the oiled shingles, but the gloss is objectionable, and the coloring is spoiled. The manner of laying the shingles has a great deal to do with the effect of the treatment, as the same stain may give different appearances according as they are laid in straight courses or otherwise. They are often laid so as to break up the surfaces as much as possible, in which case the tone of color will appear darker by the half shadows. Perhaps the most pleasing broken and varied effects are obtained by using ordinary rough-sawn shingles, which gives a shadowed surface, and the stain is unequally taken up by the wood. The colors employed for shingle work are numerous. The shingled or upper stories of a house may be stained a yellowish or orange color, and the dressings, or trimmings, as they are called, a dull shade of bluish green. The lower story may be of a dark reddish tone. In other instances the stain may be of light tints of Indian red or yellow, red and black, burnt sienna with burnt umber, old gold, obtained by using Indian yellow and blue black, brown madder and burnt sienna. More or less contrast can be had by using cool colors in the trimmings, such as blue gray, and warm colors on the surfaces; such as burnt umber, Indian red, sienna. Harmonies are obtained by making one color enter with all the others, or by making the trimmings agree with the body colors, although of lighter tone. In other cases the artist may choose a graded treatment, using different shades of the same color, contrasting with a complementary color. Thus, the body of the house may be in three shades of green, the deepest being placed on the ground story, and the lighter shades in the second and upper stories. A dulled red may be used for the trim-

(Continued on Page 182.)

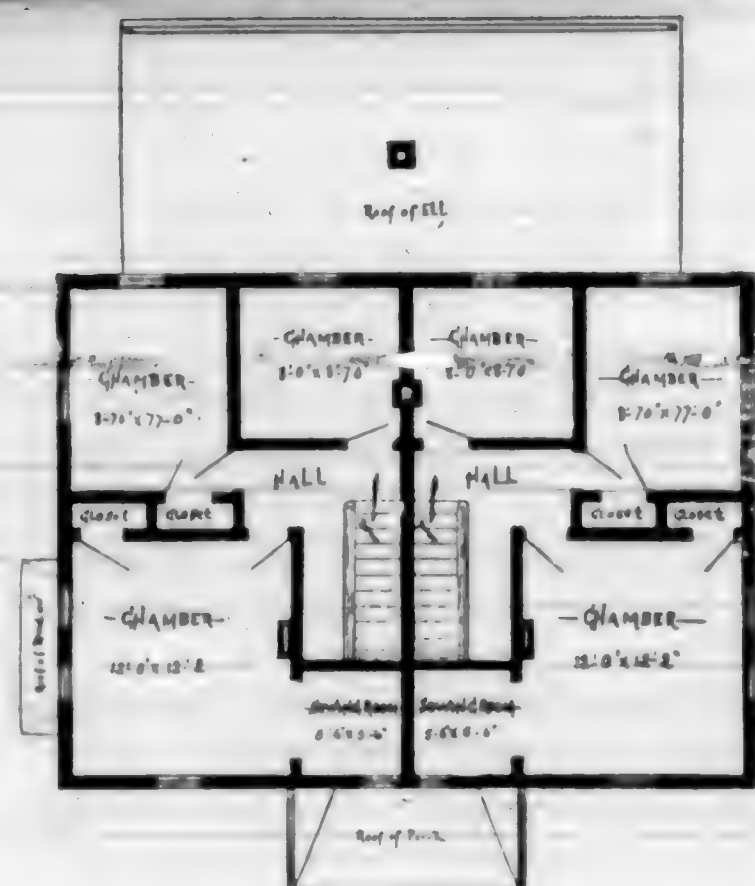


FIRST STORY PLAN



A
DESIGN
FOR A
Double Dwelling
HOUSE

A. F. W. LESLIE



SECOND FLOOR PLAN



FOR DESCRIPTION SEE PAGES 180 AND 182.

(Concluded from Page 180.)

mings. Shingle roofs are often painted a deep red of dull tone, but the coloring soon gets dark from weathering. Venetian red, burnt umber, and lamp-black make a good mixture for this purpose. One author observes, the darkened or dulled scales of color are to be preferred to pure tints. The last require to be produced by white, and are apt to be weak and sickly in expression. Sombre coloring gives a character and dignity which light tints fail to produce. The powerful contrasts of complementary colors are generally less pleasing than a harmony of coloring, that is, where the normal colors are darkened or dulled by mixing with black or gray. According to such a treatment, the preservation of the same character is observed throughout the composition, and the hues and tones have a relation with each other. In other words, the most pleasing coloring for external purposes is that where the contrast produced is that of tone. Such a harmony never wearies, like that produced by crude complementary colors.

It may interest my readers to learn of some protection to iron, in building, from rust. It seems that some French engineer observed that several chains embedded in mortar for a number of years were in no way affected by rust. It was in a bridge that he noticed this peculiarity; so he investigated and found that iron does not rust in water in which are dissolved small quantities of caustic alkalis, or alkaline earths, which neutralize every possible trace of acid. Following up this fact, paint has been made containing caustic alkaline earth. Although a thin coat of paint cannot contain so much alkali as a thick bed of mortar, the alkaline action will still have an effect so long as the coating has a certain consistence. Under any circumstances these new paints will be free from active acids. They are called Riegelman's paints, and have not yet, I believe, been brought to this country.

REMARKS ON THE ABOVE.

We have given the article just as received from our correspondent. Many of the materials specified would not be applicable to this section of the country. The cost mentioned is far below the price for which the building could be erected in this city. With specifications made in keeping with materials and work necessary to complete plan as usually called for in buildings of this kind, the cost would not be less than \$3,700, and probably \$4,000 would be nearer the true figure.

CHICAGO is the greatest lumber market in the world. The single item of sawed lumber received there in 1881 would lay an inch flooring fourteen feet wide round the earth at the equator. The amount of lumber manufactured in the three States of Michigan, Wisconsin, and Minnesota during 1881 would lay such a floor fifty feet wide.

All new subscribers for 1884 will receive the balance of this year free.

American House Carpenter. Price \$5.00.

Chats With Clients.

"THE fact is, I want a house that is totally different from any other house that was ever built."

"Totally different?"

"Yes, absolutely unlike anything that ever was seen on the face of the earth."

"You are an extraordinary man, and have an extraordinary family, I suppose?"

"Well, no, I can't exactly say that, but I'm sick of this everlasting sameness, and I want something that will sort of make people open their eyes and wonder what kind of a fellow it is that lives in such a house. I tell you there's nothing like a little originality in the world."

"You want the house to suit your peculiar needs and circumstances?"

"That's it precisely. I want it to fit me just like a hat or a pair of boots. If I want a suit of clothes made I don't send another man to be measured, I go myself. Something with a house. If it don't fit me I can't live in it with any comfort. Now, you know I'm not exactly like anybody else; I'm not even a twin. Consequently my house ought to be—it ought to be—"

"Totally unlike anything else ever seen on the face of the earth."

"Perhaps that's putting it a little strong, but you know what I mean, at least you ought to. If you can't give me anything new, why then I don't see the need of having any plans."

"What do you say to a house of one room?"

"One room! That wouldn't answer at all. We must have about the usual number of rooms, of course."

"And of about the 'usual' size?"

"Yes."

"Not much chance for originality there."

"Can't you arrange them in some novel way?"

"Possibly. How would it suit you to set them all in a row, or around in a circle, or one above another—tower of Babel fashion—that would be novel in a dwelling-house."

"Altogether too much so. But I wasn't thinking so much about the inside; that of necessity must be similar to other house-keeping establishments."

"Oh, I understand, you wish to *appear* to be original; that's easier still. Build a high basement of white birch logs with the bark on, the first story of anthracite coal laid in red mortar, second of railroad ties painted blue, and shingle the roof with tin pans, use empty flour barrels for chimneys, get the top of an old 'one-horse shay' for a front porch, and hang all the window curtains on the outside."

"Oh, fie! you're making fun of me. I want something sensible and practical, but not exactly like the common run of cheap houses."

"Why didn't you say so! Originality, like the true poet, is born, not made; unless it springs from an honest expression of your needs and circumstances, and a simple endeavor to meet them in a downright rational

fashion, it will be a sham. Arrange the rooms as you want them, taking into account the location and outside surroundings as well as the internal needs, but without any special anxiety concerning the exterior. Build the walls of the first story of good, honest, natural stones, which abound on your farm. Cover the second story, which will be of wood, with cypress shingles, oiled, but not painted, and the roof with red tiles. If the total result lacks novelty, you can console yourself with the reflection that commonplace obscurity is preferable to conspicuous deformity.

"The materials that I have mentioned are all easily obtained; they are unobjectionable in point of economy and durability; they are especially suitable for the rough and rugged location where the house will stand, and will surely look well unless you force the structure to make false pretenses for the sake of challenging the stupid wonder of your neighbors."

—The Builder.

Great Pyramid Hieroglyphics.

EDITORS ARCHITECT: In your September issue, the question is asked why the Great Pyramid should be entirely barren of hieroglyphics, in a country where every object of interest seems to be covered with them. From a careful study of the works of travelers and historians who have made this grand monument the subject for their most careful consideration, I find that originally it was beautifully cased and covered with hieroglyphics. According to the Hindoo records, it was "cased with colored marbles," which at least is probable, as fragments of marble and granite were found among the debris.

Herodotus states: "On the outside were inscribed in Egyptian characters the various sums of money expended in the progress of the work." In Wilkinson's Hand Book of Egypt we find that "it was covered with a smooth, inaccessible casing." Dean Stanley adds: "It also seems that these smooth outside were covered with sculpture."

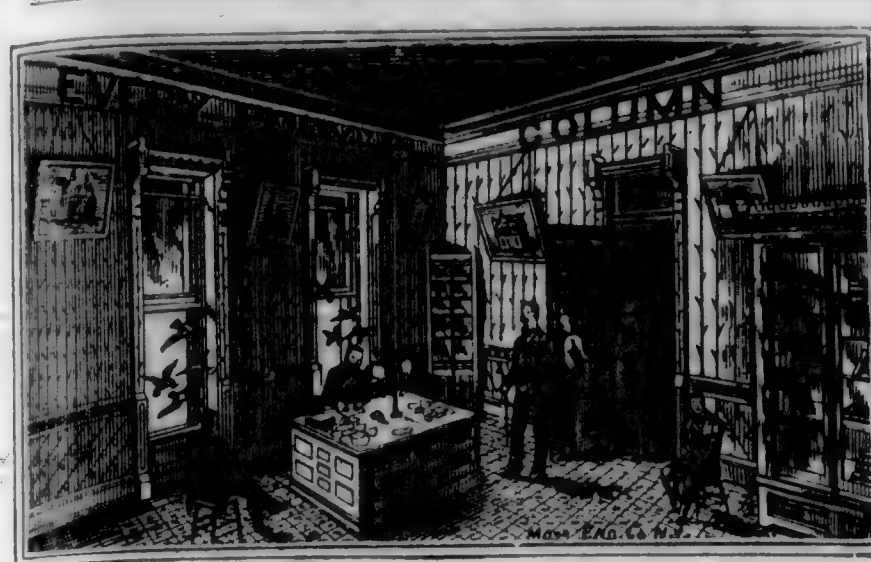
Dr. Shaw says: "It was incrustated all over with the finest granite marble."

The above opinions are confirmed by Abdel-Lateef, who states that "the polished exterior stones were covered with writing, which, if copied upon paper, would fill more than ten thousand pages."

As a settlement of the dispute upon this subject, Col. Howard Vyse, in 1837 actually discovered two of the casing-stones *in situ*: and on the Pyramid of Chephren, near by, more than ten thousand square feet of the original casing may still be seen.

It is a historical fact that the casing-stones of the Great Pyramid were removed in A. D. 1166, by order of Sultan Saladin, to build his citadel at Cairo. Yours truly, G. F.

Should this Journal be received by any subscriber who does not want it, or beyond the time they intend to pay for it, let them not fail to write us direct to stop it. We will not knowingly send the paper to any one who does not wish it, but if it is continued through the failure of the subscriber to notify us to discontinue it, we shall positively demand payment for the time it is sent.



Architects, Contractors, Carpenters, and Mechanics generally are respectfully requested to furnish us items of interest for this column. We will gladly answer any and all questions pertaining to the architectural and building interests. If illustrations are necessary to explain your ideas send us a sketch of them and we will make the cuts.

EDITOR ARCHITECT: Will you please give me information through the columns of your journal upon the following queries: What are the wages of carpenters in San Francisco? How long do jobs last? What chance would a stranger have in your city of getting steady employment? How long does your rainy season last, and its effect upon the time of mechanics? By answering the above you will greatly oblige not only myself, but several others, who desire to locate in San Francisco.

Yours respectfully, C. V. TOTILL, Chicago.

Wages depend altogether upon the skill and activity of the man. A stranger would perhaps have to be satisfied at first with \$3.00 per day. This rate could be raised in a short time by carefully observing the *style* in which work is done, and noticing the different finishes used in various houses, and the manner in which they are *put on*. Even a first-class mechanic from the East would find it necessary to devote time and study to the business, as done in this city, in order to obtain the full rate of wages. Three to four dollars per day is the ruling price, foremen getting from 50 cents to \$1.00 per day advance on these figures.

A stranger, if he be able, intelligent, and competent, would find but little trouble in securing work.

The length of a job depends somewhat upon the man with whom you get employment. Some contractors keep a gang of men in steady work nearly through the entire year. It takes from three to six months to erect and finish a building of average cost, say from \$5,000 to \$20,000.

Eastern mechanics have an erroneous idea in regard to our rainy season. It generally commences with a few showers in September. October passes, with a few rainy days. During the present season, up to the 1st of November, about 2 inches of rain have fallen. November may be said to be our Indian Summer, some of our most pleasant weather occurring between the 1st of Nov. and Christmas. From the latter part of December to April, it is wet, off and on, same as any other place, but very seldom more than three days at a time being rainy. Snow is seldom seen in San Francisco, and our winter season is about the same as in any other place of the same

latitude where snow is not found at this time of the year. If you are lucky enough to get on a job that is just housed in before the rainy season gets fully started, the chances are that you will lose no more time than you would in any other State under similar conditions. There is almost a complete absence of snow, and with the thermometer seldom below 30° above zero, we think there are but few places which offer superior advantages to first-class workmen.

Items of Interest to Draughtsmen.

WARM water is better than cold for rubbing up Indian Ink.

WHEN it becomes necessary to trim a piece of rubber, it will be found that the knife will cut much more readily if dipped in water.

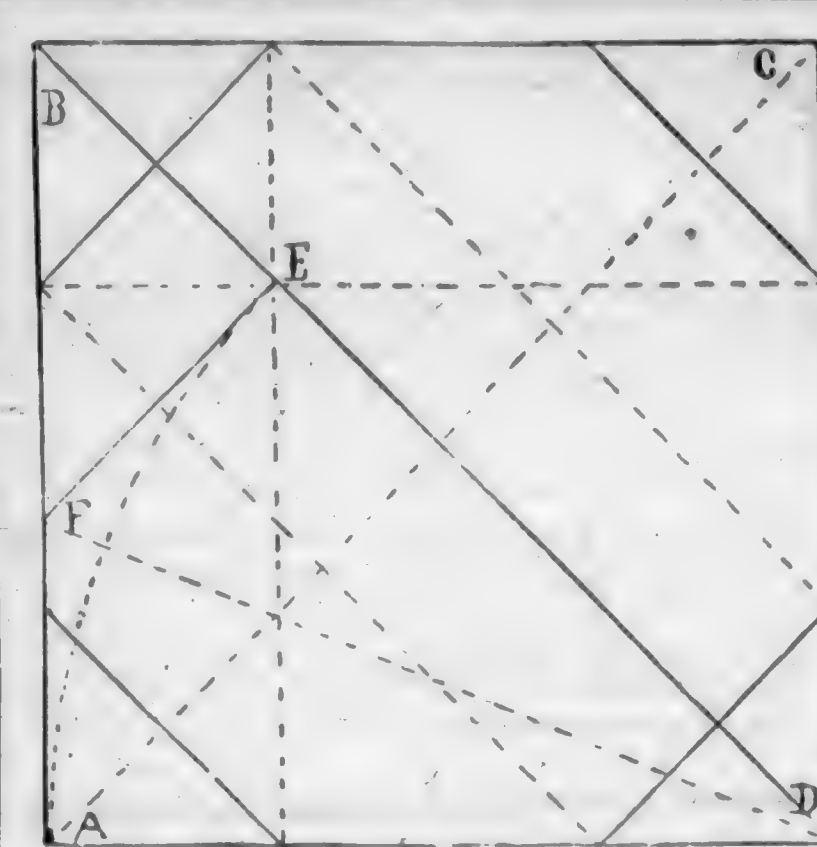
WHEN paste is used to fasten papers to a board, both sides of the paper should be dampened, as the paste takes longer to dry.

IN sharpening pencils, be sure the knife-blade has a good edge. Many a pencil has been half cut away on account of the blade being dull, on account of the undue pressure necessary.

STEAL bread makes an excellent means of cleaning up a drawing. It will hardly remove pencil lines of any strength, but it clears up the surface beautifully. Avoid the crust, as it may dent and scratch the paper when rubbed upon it.

IN selecting a pen, care should be taken to see that the nibs are of the same length, and that they are of sufficient thickness. In some pens the metal is so thin that the nibs really cut into the paper, and another disadvantage is, that in using the very moderate amount of pressure necessary to keep the back nib against the ruler, the two surfaces of the metal become nearly in contact, and the line becomes uneven. A fine pen will not necessarily make fine lines; a pen of medium size, if in order, will work as finely, and the larger handle is more convenient to hold.

It has been a mystery to some people why the dark wood so highly prized for furniture should be called "rosewood." Its color certainly does not look much like a rose, so we must look for some other reason. An exchange explains that when the tree is first cut, the fresh wood possesses a very strong, rose-like fragrance; hence the name. There are a half dozen or more kinds of rosewood trees. The varieties are also found in South America and in the East Indies and neighboring islands. Sometimes the trees grow so large that planks four feet broad and ten feet in length can be cut from them. These broad planks are principally used to make the tops of piano-fortes. When growing in the forest, the tree is remarkable for its beauty, but such is its value in manufacturing as an ornamental wood that some of the forests where it once grew abundantly now have scarcely a single specimen.



NEWARK, N. J., October 13, 1883.

EDITOR CALIFORNIA ARCHITECT AND BUILDING NEWS:—Fig. 1 exhibits the operation of finding the sides of an eight-sided polygon, and also the angle to mitre the sides.

To find the sides of an eight-sided polygon, draw the square A B C D and E equilateral and equiangular; join D B. From the point D as a center, with D A as a radius, describe an arc, cutting D B in E. Then E B equals the side of the polygon, and E F D equals the angle to mitre the sides.

By the use of the square to mitre the sides, place the square with E D on the blade, and E B on the tongue; mark from the latter for the angle required.

By calculation—Let E D equal 18x18 inches, equal 324 plus 324 inches, equal 648 inches, square root of which is 25.4558 inches, minus 18 inches, equals 7.4558 inches, or 7 and 7-16ths inches equal E B.

By proportion—7.4558 inches :: 18 inches :: 7.5 inches; 7.5 x 18 inches equal 135 inches; divided by 7.4558 inches equal 18.1067 inches, or 18 and 3-32d inches equal E D.

I am yours, L. D. GOULD.

Wheeler's Patent Wood Filler.

A NOTABLE progress has been made in the appearance of the different finishes used in a building, since the introduction of this celebrated preparation. By its use the pores of the wood are filled so that a beautiful smooth surface is obtained which could not be had without its use. Although it seems to have been originally designed more especially for hardwoods, it has been found by actual test to be adapted to the softer redwoods and fir, so generally used on this coast. For curly redwood it has no equal, as it brings out the grain of the wood better than any other article of its kind. It is also being extensively used by our piano and furniture manufacturers. It can be obtained from all the principal dealers in paints, etc., on the coast.

In-Doors and Out.

A NEW publication, devoted to sanitary and rural improvement, has made its appearance on our desk. Its items on Healthy Homes and Beautiful Surroundings are decidedly unique in their originality. The price has been fixed at 50 cents per year. The office is at 119 Pearl Street, New York.

Popular Fallacies in Regard to Ventilation.

By Dr. Chas. R. Dryer, of the Fort Wayne College of Medicine.

The first and great popular fallacy in regard to ventilation is that it needs no special attention. This is a more serious error among the well-to-do than among the poorer classes, inasmuch as the houses of the former are more nearly air-tight. With solid brick walls, double-sashed windows, weather-stripped doors, and a base-burning coal stove, the exclusion of pure air is carried to the utmost extent. This condition is happily somewhat relieved by the use of open coal grates. But how many fine houses does the physician enter without noticing the close, foul odor, and the stifling air which comes from over-heating and poor ventilation? In such rooms he finds nervous, headachy women, and pale, irritable children, suffering from colds the winter through. Such families need judicious instruction that respired air contains one of the most virulent poisons known, and that dry and overheated air is debilitating and irritating, leaving the mucous membrane sensitive, to be inflamed by every breath of the natural atmosphere.

The second popular fallacy is that the poison of respired air is carbonic acid.

This is an example of superstition at the "survival" in science of an idea long after it has been proved to be false. It is perpetuated in school text-books and popular treatises innumerable. Indeed, correctness of statement upon the subject is this rare exception; gross error the rule.

Carbonic acid gas is no more poisonous than water; animals immersed in it die just as they do if immersed in water, and for the same reason, viz., want of oxygen. Birds have been made to live in an atmosphere containing 35-40 per cent. of pure carbonic acid, and about an equal per cent. of oxygen. Yet when the carbonic acid of *respired air* rises to one per cent. that air is very dangerous poison. The solution of this puzzle is that respired air contains a very small proportion of poisonous organic matter, which is constantly exhaled from even the healthiest lungs. Its exact nature has not been determined. It is the source of the foul odor so characteristic of badly ventilated rooms. The air from the 'exit of pipes of a crowded hall darkens sulphuric acid, decolorizes potassium permanganate, and causes water, or a sponge saturated with it, to putrefy. This poisonous matter is produced in quantities proportionate to the amount of carbonic acid, hence the quantity of the latter is an indicator of the relative quantity of the power, and carbonic acid should never be allowed to accumulate in occupied rooms to the extent of seven-tenths of one per cent.

The third popular fallacy is that the most impure air accumulates near the floor of the room. This false idea has probably arisen from the fact that carbonic acid is more than half as heavy again as air, and can be poured

from one dish to another like water. Although this is true when both gases are at the same temperature, a very little difference of temperature is sufficient to reverse these conditions. Respired air issues from the nostrils at a temperature of nearly 100° Fahrenheit, and is lighter than the outer air at 70° or 80° . Again, the temperature of the body is nearly 100° , usually much above that of the surrounding air. This is sufficient to create an upward current rising from the body of every person in the room, just as the heated air rises above a hot stove. If to these influences be added the more powerful action of a stove, register, or other heating apparatus, it will be understood how the impure air rises and accumulates very rapidly near the ceiling. This can easily be proved by experiment, such as placing candles at various heights. The upper one will burn much more dimly than the lower. At the same time the cooler air from the floor moves toward the stove to enter it, or to join the current rising from it.

The fourth popular fallacy is that the outlet for impure air is best placed at the top of the room, and the inlet for pure air at the bottom.

This may seem a contradiction to the third fallacy, but is not, for several reasons. An opening into a cold place at the top of the room is often not an outlet at all, but simply allows cold air to drop down into the room. If it be an outlet it is very wasteful of heat. The air of the room is heated at some expense, and then turned out of doors as soon as possible. If the inlet be near the floor, there will be a cold draught upon the feet of the occupants of the room, and although such an arrangement may ventilate, it will be attended with such disadvantages as to render it highly objectionable. Wherever possible, there should be an outlet near the floor into a heated flue, in which the upward draught is sufficient to constantly draw the cooler air off the floor. An open fire flue is the most efficient outlet that can be devised. Instead of that, a direct draught stove in which a door above the fire may be opened, answers the purpose admirably. The inlet may be for pure heated air through a register near the floor on the opposite side of the room from the outlet, or for pure cold air by an opening directed upward behind the stove, and above the heads of the occupants of the room. Thus all cold draughts will be avoided; the pure cold air will mingle immediately with the impure air near the ceiling, and the room will be equally and economically warmed and efficiently ventilated. June air may be had in January, and the children will be as merry and rosy as the street children, who have nothing but oxygen to make them merry.

THERE are churches and mosques in Palestine on the roofs of which you could stand from two to five thousand people.

All new subscribers for 1884 will receive the balance of this year free.

How to Cleanse the Waste Pipes.

ONE of the most frequent and trying annoyances of housekeeping, as many can testify, and which a writer in the Philadelphia *Ledger* freely asserts, is the obstruction to the free, quick outlet of the waste water of the washstand, the bath-tub, and the kitchen sink.

This is caused by a gradual accumulation of small bits of refuse material, paper, rags, meat, bones, or other offal, which check and finally entirely stop the outflow of the waste water, and then the plumber is called to remove the stoppage with his force pump.

Sometimes this is effective; at others the offending waste pipe is cut out and a new one put in its place at considerable cost.

But the plumber is not always near at hand or free to come at one's call, and the matter demands immediate attention. A simple, inexpensive method of clearing the pipe is as follows: Just before retiring at night pour into the pipé enough *liquid* potash lye of 36° strength to fill the "trap," as it is called, or ben' portion of the pipe just below the outlet. About a pint will suffice for a wash-stand, or a quart for a bath-tub or kitchen sink. *Be sure that no water runs into it till next morning.*

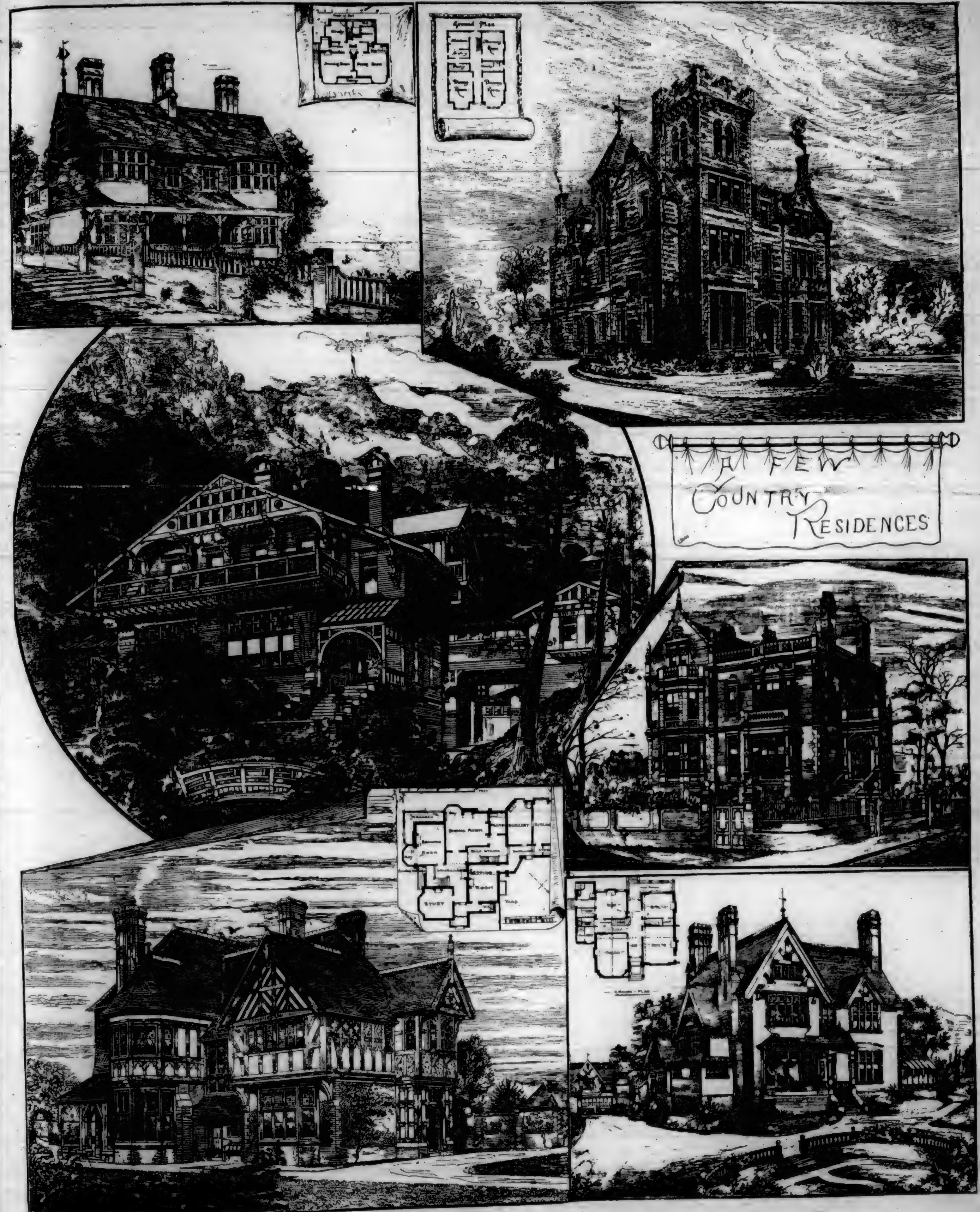
"During the night the lye will convert all of the offal in the pipe into *soft soap*, and the first current of water in the morning will remove it entirely, and leave the pipe as clean as new. The writer has never had occasion, in over thirty years' experience, to make more than two applications of it in any one case.

A remarkable example of the value of this process was that of a large drain pipe which carried off the waste of an extensive country house, near Philadelphia, and ran under a beautiful lawn in its front. A gallon of the lye removed all obstruction in a single night, and saved the necessity of digging up the pipe and disfiguring the greensward of the lawn, as the plumber intended until advised of this process.

The so-called potash lye sold in small tin cans in the shops is not recommended for this purpose; it is quite commonly misnamed, and is called caustic *soda*, which makes a *hard* soap. The lye should be kept in heavy glass bottles or demijohns, covered with wicker work, and plainly labeled; always under lock when not in actual use. It does not act upon metals, and so does not corrode the pipes as do strong acids.

In the whole world there are no known redwood forests outside of California. It is a significant fact, however, that one-fourth more finished lumber, suitable for interior housework, can be obtained from Humboldt timber than from timber grown in any other county in that State. Unlike many other kinds of trees, redwood stumps can be utilized to profitable advantage. For veneering purposes, slices from these stumps are said to be highly prized, and may probably in time prove almost invaluable.—*American Lumberman*.

American House Carpenter. Price \$5.00.



New Zealand Insurance Company.

THE property upon which this building is to be erected was purchased last month from Sir Robert Burnett, of Aberdeen, Scotland, New-hall heirs, and Moses Rosenbaum, of this city, at a cost of \$158,000. The frontage of the three properties thus concentrated measures 60 feet on California Street, viz., Nos. 310, 312, and 314, with depth of 124 feet and rear frontage to Halleck Street of 62 feet and 11 inches. As will be seen hereafter, this rear approach is a great advantage, when the purposes for which the building has been designed are explained. The whole area is to be covered by a massive six-story building of pressed and enameled brick, Oamaru, New Zealand free stone, and California granite. The elevations on California Street and Halleck Street are so arranged as to allow of a very large area of plateglass for the purpose of making the interior as light and comfortable as possible. This is the more easily obtainable from the fact that the property is on the sunny side of California Street. Light areas have been left in the plan of each story to brighten the rear portion of the offices on both fronts. The arrangement of offices on the ground floor is something novel for this city. On each side of a twelve-foot corridor there is a handsome office 22x60 feet, with vaults, complete for bank or insurance purposes. About the center of the building, dividing the front from the rear offices, is a space of, say 25 feet. This is utilized for stairway and double elevator on the right, and closets and sinks on the left. The elevators will be a novelty in architecture in this city, being constructed on the same principle as those in the Union Bank Building, New York. They will be on the compensating principle, as one goes up the other descends, thus obviating the frequent delay occasioned by having to wait on an upper story, with the mortification of knowing that the machine has to descend to the very basement, and then go to the top of the building again before you can reach the street. This corridor leads to the main office of the New Zealand Insurance Company, with floor area of 32x56 feet. The ceiling of this spacious room will be 34 feet in height, handsomely groined and arched. It will be lit by cathedral windows occupying the whole frontage of 62 11-12ths feet on Halleck Street, and so arranged as to give the greatest possible accommodation. The detail of this room will be finished in natural woods, and so designed as to make it, perhaps, the most perfect and

beautiful insurance office in the United States. Within this room will be located the offices of the New Zealand Insurance Company, the agencies of the New Zealand Loan and Mercantile Agency Company, the New Zealand Stud and Pedigree Company, and the Correspondent of the Bank of New Zealand. It is not often that such a combination of foreign institutions is to be found together in one counting-house. The New Zealand Insurance Company sets an example that we hope will be shortly followed by other institutions of a similar character in anchoring itself in this substantial way to our city, thereby removing all excuse for a continuance of the otherwise reasonable complaint of the drain of local premiums by foreign Insurance Companies. The Manager of the New Zealand Insurance Company has furnished us with the following synopsis of its history:—

It was established in Auckland, New Zealand, in May, 1859, by a few leading men, with paid-up capital of \$24,225. In 1862 its paid-up capital had increased to \$75,000; in July, 1863, to \$150,000; in July, 1864, to \$225,000; in January, 1865, to \$250,000; in 1871, to \$375,000; in 1873, to \$500,000, and to-day the paid-up capital stands at \$1,000,000, and assets over \$2,000,000, with unlimited liability of shareholders. When foreign capital represented by companies of this calibre comes to our shores, and identifies itself with our citizens, as the New Zealand Insurance Company has done, we cannot do better than take it into the family, and the more the companies invest with us the better we will like it. Had the investment been made by a company hailing from London, there would not be so much to be astonished about, because we can give them a much greater return than can be obtained in the United Kingdom, but it has remained for the progressive and youngest of Britain's daughters to come in by the Golden Gate, and put New Zealand money, which brings a higher rate of interest at home, into property in San Francisco. We hope this enterprising company will reap the reward it deserves in initiating this new departure, and that increased business and profit may accrue thereby. The design of this fine structure was furnished by Messrs. Wright & Sanders.

The following statement of the condition and affairs of the New Zealand Insurance Company of Auckland, in the British Colony, New Zealand, on the 30th day of November, A. D. 1882, and for the year ending on that day, was made to the Insurance Commissioner of the State of California, pursuant to the provisions

of Sections 610 and 611 of the Political Code, condensed as per blank furnished by the Insurance Commissioner:—

CAPITAL.....\$5,000,000 00
Amount of capital stock paid up in cash.....\$1,000,000 00
UNLIMITED LIABILITY OF SHAREHOLDERS.

ASSETS.
Real Estate owned by Company.....\$480,216 00
Loans on bond and mortgage.....\$30,704 00
Cash market value of all stocks and bonds owned by Company.....689,700 00
Amount of loans secured by pledge of bonds, stocks, and other marketable securities as collateral.....58,055 00
Cash in Company's office.....2,068 00
Cash in Banks.....25,108 00
Interest due and accrued on all stocks and loans.....20,497 00
Premiums in due course of collection.....7,105 00
Bills receivable, not matured, taken for fire and marine risks.....10,537 00
Due by branches and agencies.....34,358 00
Rents due and accrued.....425 00
Total Assets.....\$2,098,763 00

LIABILITIES.
Losses in process of adjustment or in suspense, and appropriations for property tax.....\$112,645 00
Gross premiums on fire risks running one year or less, \$455,006 00; re-insurance fifty per cent.....227,508 00
Gross premiums on marine and inland navigation risk, \$135,345 00; re-insurance one hundred per cent.....135,345 00
Gross premiums on marine time risks, re-insurance fifty per cent.....33,920 00
Sundry accounts owing.....285 00
Deposits.....11,000 00
Joint stock capital actually paid up.....1,000,000 00
Surplus beyond capital and all other liabilities.....577,620 00
Total Liabilities.....\$2,098,763 00

INCOME.
Net cash actually received for fire premiums.....455,006 00
Net cash actually received for marine premiums.....530,964 00
Received for interest and dividends on bonds, stocks, loans, and from all other sources.....127,970 00
Total Income.....\$1,113,940 00

EXPENDITURES.
Net amount paid for fire losses (including appropriations for unpaid losses).....\$ 274,940 00
Net amount paid for marine losses (including appropriations for unpaid losses).....388,245 00
Dividends to stockholders.....150,000 00
Paid for salaries, fees, and other charges for officers, clerks, etc.....209,520 00
Paid for State, national, and local taxes.....5,405 00
Fire and marine associations, insurance brigades, and S. corps.....8,900 00
Total Expenditures.....\$1,087,010 00

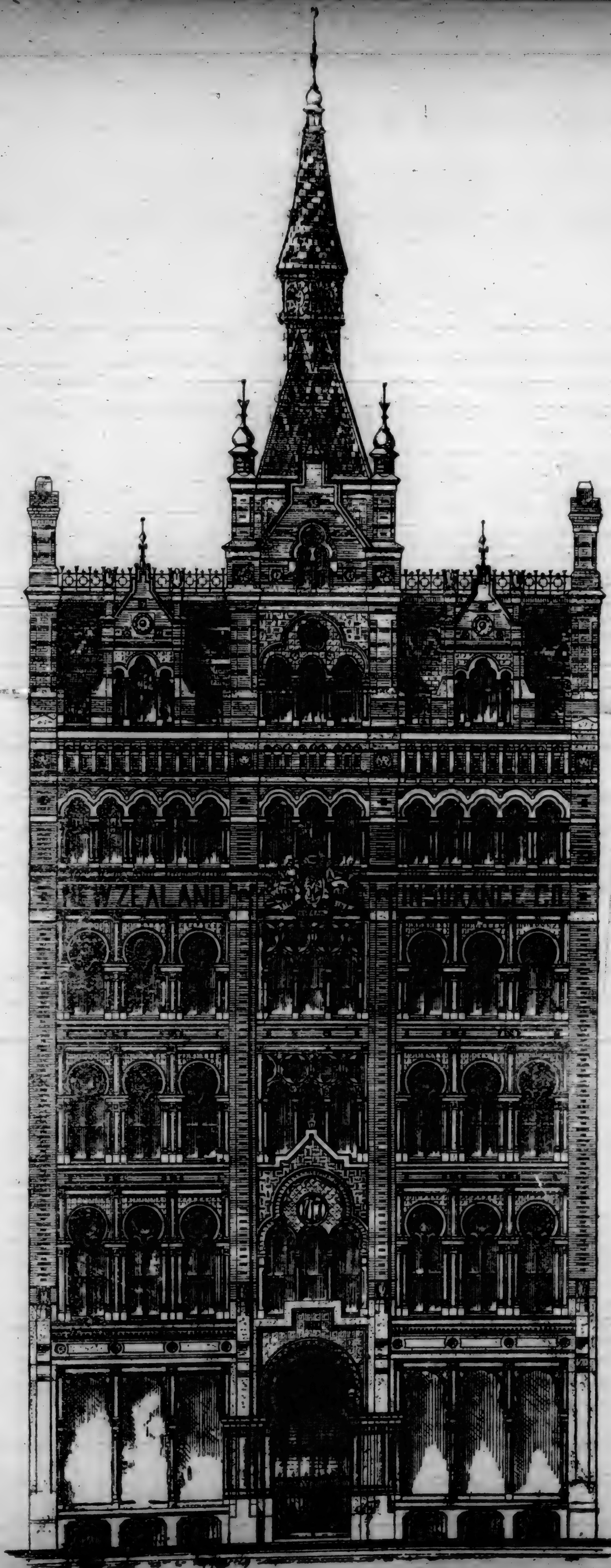
LOSSES.
Incurred during the year.....Fire.....\$274,940 00 Marine.....\$388,245 00

RISKS AND PREMIUMS.
Fire Risks. Premiums.
Net amt. in force November 30, 1882 \$6,175,075 \$439,851 00
Risks written in State of California.....5,110,854 63,362 00
Marine Risks. Premiums.
Net amt. in force November 30, 1882 \$14,456,730 \$180,709 00
Risks written in State of California.....2,184,516 26,847 00
Surplus for Policy Holders.....\$1,577,620
Premiums received from organization of Company to date.....\$10,891,174 00
Losses actually paid from organization of Company to date.....6,649,770 00
Dividends (cash) declared.....1,535,230 00
Amount deposited as security in Oregon.....50,000 00

W. F. BROWN, Manager, 27 Stark St., Portland, Or.
HUGH CRAIG.....Manager for Pacific Coast
412 CALIFORNIA ST., SAN FRANCISCO, CAL.

George P. Pierce, General Manager,
AUCKLAND, NEW ZEALAND.

Wright
&
Sanders,
Architects.



Improved Rapid Method of Copying Drawings, Manuscripts, Etc.

THE common method of copying drawings by contact with the blue process or sensitive silver paper, which requires an exposure to the sun of from fifteen minutes to half an hour, seems likely to be superseded to some extent by the introduction of improved gelatine bromide of silver paper.

Gelatine sensitive paper has been difficult to prepare, but by means of recent improvements the manufacturers are now able to furnish it in large sheets uniformly coated, so that its use in various branches of the arts promises to be extensive.

Architects, draughtsmen, engineers, and others who wish to make duplicate copies of their drawings are, by the usual processes, obliged to first make a tracing upon transparent linen cloth, so that the light may easily affect the sensitive paper. Much extra time is lost and expense incurred. By means of the gelatine sensitive paper any ordinary thick card-board drawing can be copied in a few seconds, either by diffused daylight or gas or lamp-light. The copy will be an exact reproduction of the original, showing the letters or figures non reversed.

If it is desired to make a copy in the daytime, any dark closet will answer, where all white light is excluded. The tools required are an ordinary photograph printing frame and a red lantern or lamp.

The sensitive gelatine paper is cut to the size required, and laid with the sensitive side upward upon the face of the drawing, and pressed thereon in the usual manner, by springs at the back of the frame, which is then carried to the window and exposed with the glass side outward from two to five seconds to the light, the exposure varying according to the thickness of the drawing. If gas or lamp-light is used at night, from twenty to thirty minutes exposure is sufficient.

The frame is returned to the dark closet; the exposed sheet is removed to a dark box, and other duplicates of the drawing can be made in the same way. It is thus possible to make from ten to twenty copies of one thick drawing in the same time that it usually takes to obtain one copy of a transparent tracing by the ordinary blue process.

The treatment of the exposed sheets is quite simple; all that is necessary is to provide from three to four large pans or a large sink divided into partitions. The development of the exposed sheets can be carried on at night or at any convenient time, but a red light only must be used. The paper is first passed through a dish or pan of water and then immersed in a solution, face upward, composed of eight parts of a saturated solution of oxalate of potash to one part of a saturated solution of sulphate of iron, enough to cover the face of the paper. Both chemicals are easily obtained at a druggist's. The latent image soon appears, and a beautiful copy of the drawing is obtained, black where the original was white, with clear

white lines to represent the white lines of the drawing. With one solution from six to eight copies can be developed, one right after the other. After development the print is dipped in a dish of clear water for a minute, and finally immersed for three minutes in the final or fixing solution, composed of one part of hyposulphite of soda dissolved in six parts of water. It is then removed to a last dish of water, face downward, soaked for a few minutes, then hung up to dry; when dry it is ready for use. Instead of a drawing, manuscript can be placed in the printing frame and exposed as described. All the water marks or peculiarities of the grain of the paper will be faithfully reproduced. The advantages of this process are self-evident.

Intricate mechanical drawings can be so rapidly copied that working copies can be quickly delivered. By this process original manuscripts, certificates, and documents of every kind can be rapidly copied, every detail being brought out, the original paper serving as the negative, the copy being of the exact size as the original.—*Scientific American.*

Handsaws.

SEVERANCE of material was doubtless among the first difficulties which confronted mankind, and to meet this the primal saw, as being at once simple and effective, whether it was the jaw-bone of a snake, the back-bone of a fish, a jagged flint, or whatever else it may have been, was adopted, and furnished the idea for future development far in the long night before the dawn of history. The Greek story is that Talus found the jaw-bone of a snake, and, after discovering from it the properties of a saw, imitated it by notching a piece of metal, and was killed by his uncle through jealousy. Other myths run that Perdix used the back-bone of a fish as a saw, was changed into a partridge by the envious gods, and deified by his countrymen. But the Greeks were egregious wondermongers and liars, and the saw was in use before that people came into the eyes of the world. It was a common tool among the ancient Egyptians, and many specimens of their saws are yet preserved. Even among that people it had lost much of its primitive rudeness, and was made of bronze with teeth well ground or cut out, and was inserted in a handle like the modern case-knife, or bound to the same with thongs and operated with one hand. The teeth were pointed from the handle, and the cutting was done by a thrust movement, as in modern saws. The material to be sawed was placed upright and lashed to posts set in the ground. The Egyptians, as also the Phoenicians, used saws for cutting stone as well as wood, and the stones in the temple of Solomon were faced with saws. Samuel, 1033 B. C., mentions them casually. A two-handed saw has been found in the ruins of Nimroud, and many saws have been brought to light in Thebes.

In the stone age, saws were made of flakes of flint set into a back of wood, and secured by means of bitumen, and the early dwellers

in Europe also notched shells. As late as 1768, Captain Cook found the South Sea Islanders using saws made of sharks' teeth lashed to a back piece by sinews. Saws made of obsidian were used in ancient Mexico, and specimens of these have been found buried under the deposits of sand and gravel in New Jersey, proving the existence of a prehistoric coast trade along the Atlantic, obsidian not being found nearer New Jersey than Mexico.

Saws of the bronze age have been discovered in considerable numbers, both in Germany and Denmark, but none have yet been found in England. These are made of plates cast very thin and then cut out.

Modern Oriental saws all have the teeth pointed toward the handle, and are operated by a drag movement. This manner of sawing and pointing the teeth seems to be most suitable to rapid sawing, but does not admit of as great accuracy as the thrust movement.

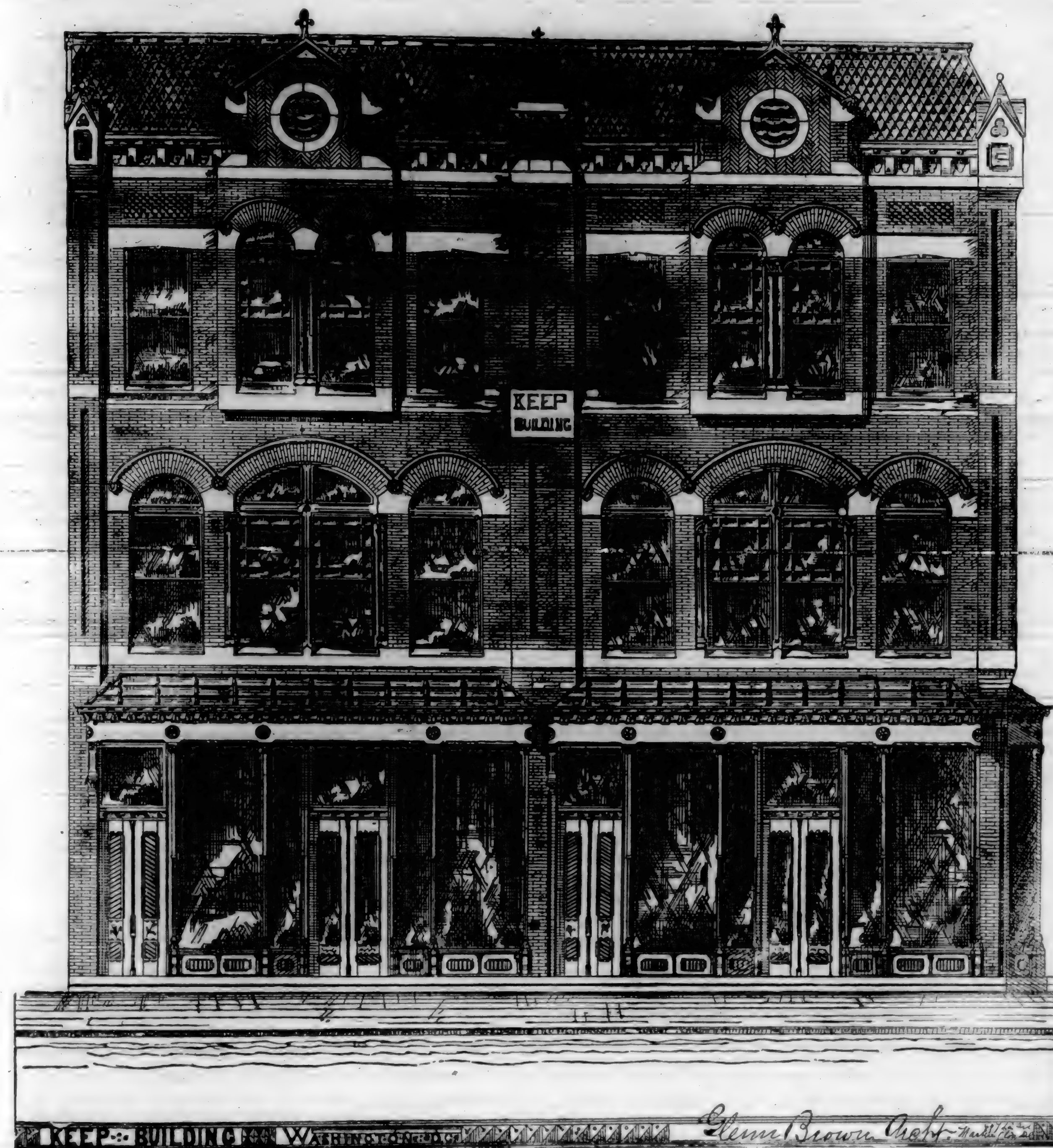
The Japanese saw is shaped like a butcher's cleaver, and has a flat handle which looks as if it might have been whittled out of an inch board, to which it is attached by wrapping tightly with fine split cane. The teeth are very narrow and long, and the sawyer stands on the plank to be sawed, and works with short, rapid, upward strokes.

The plates from which saws are made are rolled from ingots of steel carefully and uniformly tempered and varying in thickness according to the kind of saw to be made. After the blanks for the saws are stamped out, they are further tempered to the desired point by heating, and then immersed in oil for about five minutes. This oil is partially removed by sawdust, and the temper is then let down by reheating and slow cooling. The blank is then straightened by hammering, and the edge, upon which the teeth are to be cut, trimmed, after which the teeth are punched by a fly-press and then filed, tempered, oiled, and wiped, and heated till the oil blazes off. It is then hammered, ground, and glazed and grained with emery, the teeth set, and the blade properly stiffened by heating. Any discoloration is then removed by an acid, and the saw oiled. The correct spacing of the teeth is effected by means of either a double chisel or a file guide. Saws are made tapering from the tooth side to the back in order that they may not pinch or clog in the groove or kerf.

The French method is to roll the blade several times cold in order to make the grain close and the metal homogeneous. It is then heated in a furnace especially designed for the purpose, from which the air is excluded, and then bathed in colza oil in a dark chamber, and tempered by means of a machine in which the blade passes through cast-iron plates heated to a fixed temperature.—*Call Smith, in Industrial World.*

Gases from the furnaces in iron districts are very injurious to trees in the neighborhood. The sulphuric acid contained in the gases is absorbed by the leaves.

Mechanics' Geometry. Price \$5.00.



DESIGN OF STORE FRONT, BY GLENN BROWN, ARCHITECT.

The Directors of the University of Southern California, at Los Angeles, California, desire to receive from Architects competition plans, with elevation, for the erection of a brick University Building, at a cost not exceeding \$60,000. For particulars address undersigned Committee, Los Angeles, California.

E. F. SPENCE,
R. M. WEDNEY,
A. M. HOUGH.

BUILDER AND WOOD WORKER.

We continue this year our friendly relations with this most excellent publication, and will send to any address one year's numbers of the "Builder and Wood Worker," in connection with the "California Architect and Building News," for \$2.50. The influence of such jour-

nals as the above has had a marked tendency to elevate the thoughts of mechanics, so that now we find them exercising more head work in the performance of their labor. This is especially noticeable in country mechanics. We often receive letters inquiring for the best Eastern journal that gives the various new styles at present in vogue. We can unhesitatingly recommend the above.

Special and Sub-Contracts in Building Construction.

THE following remarks from the *Builder* will aptly apply to the professionals of this country:—

"However, as regards one point of recent correspondence—as to an architect's right to scrutinize sub-contracts made between a general and a subordinate contractor for any part of the work connected with a contract—much, of course, depends upon the circumstances and the standing of the contractor employed. Most architects claim the right to closely scrutinize everything done in connection with the erection and completion of the buildings they have designed, of whose requirements they are the best judges, and most experienced contractors do not appear to deny this. The commonly accepted version of a contractor's duties under his contract is that the work will be carried out by competent workmen, under the eyes of proper foremen, at daily wages, in his (the general contractor's) direct employ; and so far at least as London custom is concerned, we know that this is the ordinary practice of all leading contractors. Should an architect find any evasion of the conditions, or should he find that a sub-contract had been made with some subordinate contractor for any of the structural portions of the work, entirely foreign to him—in fact, objectionable, and not what he had a right to expect—it would be difficult to say that he had not a clear right to interfere and insist upon the conditions of the contract being fulfilled, which commonly would be covered by the clause that 'no part of the work shall be sub-let,' &c. Of course, when a contractor has the confidence of an experienced architect, he (the architect) would not have the least desire, nor, in fact, would he find it to his client's advantage to harass the contractor about matters of minor detail, connected with his (the contractor's) methods of arranging his business in his own way, and especially when there should be no need for such interference; at the same time, it would look like taking a one-sided view of an architect's proper position—standing, as he does, between the contractor and the client, to see strict justice done to both—to say that he has no concern with sub-contracts entered into between a general and subordinate contractor, because there might occur circumstances when he would have much to do with such arrangements.

"Then as to whether the frequent insertion, in architect's specifications, of the names of special firms of merchants, manufacturers, and others from whom materials connected with the structural work must be obtained—such as the stone, bricks, slates, &c.—is a modern and unnecessary innovation whenever it occurs, and a sign of undue partiality for certain firms not superior to others, when there exists a large field, so to speak, of firms quite as good, and fully capable of supplying the same class and quality of goods, whether the selection of the most suitable is not more properly a matter for the judgment of the contractor,

who undertakes all the risks, and is held to be solely responsible, are questions upon which opinion is not altogether one way. The object, of course, is to obtain the fittest and the best, and certainly the old school of architects seemed to have no difficulty in meeting the case without any special predilections. The careful wording of their specifications was with them, as is now with such of them as remain, of far greater importance to the solidity of their buildings, and their general effect, when finished, than any sentimental preference for the goods of any particular firm of merchants or manufacturers. Of course, these remarks apply to the ordinary run of specifications. Before passing on, it may be mentioned that an authority has said, 'Ambiguity is the bane of modern specifications.' Touching again the question of special or separate contracts made between architect and specialists, or others, and the bearing upon the general contractor and clerk of works, it is necessary that both of them should be fully acquainted with all the details connected with such contracts—that is, as regards what is actually included; whether the builder's work and attendances, &c., have been provided for and included in the estimates, or the contrary. This necessary information on all points should not be given simply orally, as is too frequently the case, not even when directed by the tip of a fluent tongue, but should be fixed in writing. Many specialists give little if any specification describing clearly and in full detail, for the information of others, what they have included in their contracts, and not unfrequently are they their own interpreters of what they have or have not included, and especially does this occur in connection with what is called the 'builder's work'; the general contractor, knowing nothing, hesitates, or acts upon the word of the clerk of works, who may know as little, but, nevertheless, has to arrange and look forward. Any settled arrangement tending to the avoidance of cross charges, misunderstandings, confusion of accounts—and this is really what it comes to—should be welcome to all interests concerned. Here, as in the general work, we may not inaptly quote again, 'Ambiguity is the bane of modern specifications.'

Five Per Cent. Gain vs. Ten Per Cent. Loss.

It has been remarked by an able correspondent, writing upon the subject of sub-contracts, that, "It is a difficult matter to bring proof as to the amount of profit derivable from any branch of the building trade." To my mind, this is true, and it rather amusingly reminds one of the tortures described by the experienced in connection with the mystic word "prime-cost;" it is capable of an elastic interpretation according to circumstances, and many astute brains have been before now puzzled over it, and it has not unfrequently been found to contain within itself a considerable element of profit. It need not be said that the "prime cost," as understood by all leading architects and contractors, is that which represents the net cost of the labor and materials, &c., without any further additions whatever; it is then susceptible of taking its legitimate and fair profit.

Much soreness has occurred before now by what may be called an anomalous practice, stated to be not so rare as it should be, viz., contractors of standing and repute being invited to tender for works in competition with others not of equal standing, and doing what may be termed a cheap class of work. The former, as is the custom, do not know the names of other competitors; in result, one of the latter usually gets the contract, and the former would not have wasted time and money in working up tenders, but they would have declined had they known beforehand with whom they were classed in competition. The public should understand that it is not with building affairs as with many of the other concerns of life; the apparent saving of 5 per cent. in a contract may, as it has in very many instances before now, prove a 10 per cent. loss.

A Result of Co-operation.

WORKINGMEN managing a co-operative establishment, and performing their own labor, would undoubtedly experience seasons when they would be compelled to accept not only smaller dividends but lower wages, in order to have any dividends at all. Still it is well known that men when working for themselves will put up with privations, and hardships even, which they would not think of submitting to if imposed upon them by others. One of the indirect advantages of co-operative production will be the cultivation of economy, saving, and thrift, among the workingmen who engage in it. The interest in such an establishment would form a nucleus to which every honorable and ambitious workman would have a just pride in adding something every month.—*Western Manufacturer.*

A Curious Discovery.

ONE by one the scenes of the old Franciscan Fathers are being brought to light as excavations are made near the old mission. A singular discovery was made near the city of San Luis Obispo a few days since. The *Tribune* is authority for the statement that some workmen, in making excavations on the side of the San Luis Obispo Mountain, discovered an ancient smelting furnace, the remains of the arches and smelting pots, or crucibles, being quite abundant. The discovery, when taken in connection with the tradition that the old missions of the coast had an abundance of crude silver, is quite significant. The remains of such a furnace are known to exist in the mountains back of Santa Barbara and Ventura, and piles of slag attest the amount of work done there in former times.

Stables, Fences, Out Buildings, etc. Price \$2.50.

All new subscribers for 1884 will receive the balance of this year free.

THE BENEFITS OF TREES.**Their Effect on Climate, Soil, and Mankind.**

AN interesting paper on "Forestry" was read before the Geographical Society lately by C. A. Washburne. He began by speaking of the increase of the population of the world. Mr. Washburne took the opposite stand-point from Malthus, and said that we should not try to devise plans of preventing the increase of population, but to devise means to provide food for them. The world could be made to support seven times its present population, and that way is by increasing our forests. By planting our now barren hills with trees, it would leave them plenty of land in the valley to cultivate grain. It is an undeniable fact that where trees are in abundance the country is thrifty. Speaking of the devastation of timber lands, the speaker cited Arabia, Syria, Egypt, and the countries of the Old World. At one period in the world's history these places supported a vast population, beautiful cities, and wealthy kingdoms. Now there are no more barren places on the face of the earth than are the places that were once the pride of the world. The cause of this wonderful change, according to Mr. Washburne's ideas, was the destruction of the timber. History tells us that many of these countries were once fertile and productive, but as the population increased the forests were destroyed, and the cessation of rains has made them what they are now. California is coming to the same end in the course of time, if we do not profit by the experience of the ancients and save our forests, or, at least, not allow them to become annihilated. Taking the scientific stand-point of the effect of forests in their influence on the rain-fall, the speaker contended that as forests are removed so will the fall of rain decrease, and to substantiate his theory and the theory of scientific men, he cited the effect of cutting off the timber among the Apennines, and in Lombardy, Germany and England, on the other hand, are still thriving nations, and one great cause is that care is taken to preserve the fertility of the soil and keep up their forests. Old Spain again is the reverse. The country is desolate and its people thrifless on account of the lack of vegetation. The effect of planting trees in our own country, especially in California, is very noticeable. Many of our valleys and grain lands are very open, over which the winds sweep, drying up the soil and blighting the crops. In those places where the prudent farmer has planted long rows of trees, the violence of the wind is broken and the growing crops are saved. Where trees grow, rain, on which we all depend, will fall. The only exceptions to the rule of forests and rain going together are the pampas of South America and our great Western plains; but these exceptions, as explained by scientists, are due to the fact that the rain-bearing winds that blow over them are condensed by the trade winds. The farmers in Nebraska, Iowa, and Illinois, are fast exhausting the fertility of the soil, and if they continue to do so, in

less than two centuries these places will be as barren as the plains around Damascus are at the present day. The speaker then compared the difference in beauty and valuation of two farms, one on which no trees were planted, and another where trees grew in abundance.

The Price of Lumber.

A NEW combination has been formed among the lumber dealers, by which the *dear public* are assured that, in the near future, no danger need be apprehended that any discounts will be allowed below the schedule prices. It has been the custom heretofore to allow contractors 10 per cent. on the rates established by the Lumber Manufacturers' Association; but the managers of that institution have wisely (?) allowed that it would be best for the interests of owners to have them understand precisely the cost of lumber used in the construction of their houses and thus be sure that a portion of the extravagant prices (?) asked by contractors should find its way in the capacious pockets of the poor men who supply lumber.

And, in order that they can thus guard the interests of owners, each one of the poor men forming the association has deposited the sum of \$10,000, which shall become forfeited in case lumber is sold for a less price than their law prescribes.

The *dear public* have been so faithfully served by the members forming the association that it is expected that they will readily acquiesce in the demands of the lumber dealers, and not allow the rich contractors to hoard as much wealth as they have done in the past.

Seriously, though, we will be pleased when the time comes that lumber will remain at a fair regular price for a year at a time, so that those who are calculating to commence extensive improvements in the future may be able to judge somewhere near the cost of building before commencing operations.

Every Architect Should Become Identified With the Chapter.

DURING the past month we have had several calls from draughtsmen, seeking information in regard to the classes established by the Chapter of Architects. Three of the applicants were connected with architectural firms in this city.

We would call the attention of architects not identified with the Chapter that it is for their interest to join at once; especially now, as it is the beginning of the year. The small outlay required will be more than gained by the knowledge the students and draughtsmen under your charge will gain under the leadership of the gentlemen who so generously give their time for the advancement of the younger members of the profession. The dues are but small—\$6.00 per year.

The Chapter is one of the most flourishing in the United States, numbering forty-six members; it also has a goodly amount of cash in the treasury. Hand in your names at once for membership. Office of the Secretary may be found at room 11, 240 Montgomery Street.

THE *Manufacturer and Builder* gives a simple process for preparing the luminous paint now coming slowly into use. The ingredients of the mixture are simply sulphur and lime, the latter being obtained from oyster shells, which are to be washed with warm water, and calcined for half an hour, then allowed to cool, pulverized, and the white portions separated from the gray refuse. The white lime is then to be put in a crucible, in alternate layers with flour of sulphur, and the cover luted on with a mixture of clay and sand, moistened with beer. The crucible is exposed to a bright flame for an hour, and is then, after cooling, broken open, when the contents will be found of a mottled white and gray color. The gray portions are to be separated and thrown away, but the white part is to be finely ground and sifted through muslin, after which it may be mixed with varnish, oil, or size, and used like ordinary paint. It is essential that objects painted with this substance, which are intended to be luminous at night, should be exposed to sunshine or bright light during the day. If so treated, the paint will retain its qualities indefinitely.

A CAVITY in a grindstone may be repaired as follows: Take a piece of old grindstone, and pound it up quite fine, or procure some fine, sharp sand and sift out the coarsest, using only the fine; make this into a paste with one-third the bulk of hydraulic lime or cement and sufficient water-glass; undercut the cavity in the grindstone, or drill key-holes in it, and fill it with the cement as above made. It will harden very rapidly. Very good artificial stones may be made in this manner in a mould, to which considerable pressure can be applied.

A MACHINE for plastering walls has been invented. It consists of a receptacle for the mortar, the segments of a cylinder in form. It is provided with a hinged leaf or press plate that moves rapidly against the mortar, and as the receptacle is moved upward against the wall, the plaster presses out through a narrow-gauged opening at the bottom.

All new subscribers for 1884 will receive the balance of this year free.

THE CALIFORNIA ARCHITECT would like to know when dealers will be satisfied with a fair profit on lumber, and thus enable those of limited means to erect buildings, and keep within their means for so doing.

DENSE forests are increasing in Australia the climate is growing more moist, and even the great central desert may become habitable.

School House and Church Architecture. Price \$4.00.

THIRTY per cent. of forest is considered the best proportion for the most beneficial effect on climate.

Detail Cottage and Constructive Architecture. Price \$10.00.

AN active tool never grows rusty.

History of Glass.

In the year A. D. 676, "messengers were sent out," according to Bede, from Wearmouth, England, to Gaul, France, to fetch makers of glass (artificers), "who were at this time unknown in England, that they might glaze the windows of the church, with the cloisters and dining-rooms." Bede adds that "they taught the English nation their handicraft, which was well adapted for inclosing the lanterns of the church, and for the vessels required for various uses." About this time Archbishop Wilfred, of York, "filled with glass" the windows of the cathedral, previously "open to the weather," and "such glass," says one, "as permitted the sun to shine through;" from which it may be inferred that glass was made that was impenetrable to the sun's rays. It was recorded, in connection with this cathedral, that "great astonishment was excited, and superstitious agency suspected, when the moon and stars were seen through a material which excluded the inclemency of the weather." Still, the adoption of glass was slow; for in 1214 Robert de Lindeley, Abbot of Peterborough, employed glass "in beautifying thirty of the windows of his monastery, previously stuffed with straw, to keep out the wind and rain;" and for some generations later the domestic windows of England were not furnished with glass, but lattice. When glass windows were first introduced, they were not fixtures, but were regarded as movable chattels, and were so considered until about A. D. 1600.—*Sci.*

PATENTS AND INVENTIONS.

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

From the official list of United States Patents in DEWEY & CO'S SCIENTIFIC PRESS PATENT AGENCY, 252 Market Street, San Francisco.

FOR WEEK ENDING OCTOBER 23, 1883.

286,993.—FLOWER-POT HOLDER AND SHIELD—Wm. A. Birch, San Francisco.

287,094.—STATION INDICATOR—W. W. Campbell, San Francisco.

287,003.—NUT LOCK—F. H. Crawford, Redding, Cal.

287,256.—ORE GRINDER AND AMALGAMATOR—Peter Eddy, Nevada City, Cal.

287,261.—BARBED WIRE FENCE—J. E. Evans, Spanish Fork, U. T.

287,374.—CAR TRUCK—Thomas J. Furbee, Bishop Creek, Cal.

287,118.—LAND-MARKER—L. Gairaud, Santa Clara, Cal.

287,276.—SEWING MACHINE—Geo. Gowing, San Francisco.

287,377.—CABLE GRIP—A. Haman, San Francisco.

287,028.—INDICATOR PADLOCK—A. Jackson, San Francisco.

287,290.—INTEREST INDICATOR—H. E. Jenne, Ben Lomond, Cal.

287,307.—CONVERTING MOTION—R. G. Moody, San Jose, Cal.

287,165.—BED LOUNGE—F. Rentschler, San Francisco.

287,166.—PHONOGRAPH—C. C. Reynolds, Prescott, A. T.

287,326.—DRILLING MACHINE—John Richards, San Francisco.

287,173.—ORE CONCENTRATOR—C. C. Rueger, San Francisco.

287,178.—CAISSON GATE—Geo. F. Schild, Vallejo, Cal.

287,198.—CRANK HANDLE FOR LIFTING-JACKS—J. M. Vance, Eureka, Cal.

287,202.—CAR AXLE—A. Walton, San Francisco.

10,658.—TRADE MARK—Franco-California Packing Company.

3,265.—LABEL—Pacific Vinegar Works, San Francisco.

NOTE.—Copies of United States 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.

How to Recut Old Files.

To the Editor of *The American Artisan*:—

PERHAPS some of your readers may not know how to dress their old files and make them useful a second time. As a general thing, tinners' files become filled with copper, etc., long before they are worn out. By the following process files may be recut two or three times:—

Dissolve 4 oz. saleratus in 1 qt. of water, and boil the files in it for half an hour, then remove, wash, and dry them. Have ready in a glass or stoneware vessel 1 qt. of rain-water, into which you have slowly added 4 oz. best sulphuric acid, keeping the proportions for any amount used. Immerse the files in this preparation for a short time, or until the files are cut out clean. Then remove, wash in clear water and dry quickly, and put on a little sweet oil to cover the surface, after which your files are ready for use.

The same liquid may be used at different times, if required, by keeping it in a bottle in a cool place. As it is poisonous, it would be better to label it and keep it away from children.—*C., in American Artisan.*

ARCHITECTS who practice in the large cities will be interested in the answer given by the law editor of *La Semaine des Constructeurs* to a correspondent who asks whether the usual commission can be collected, where old materials are used in building, upon the cost of the work as it would have been if all the materials were new. The reply to this important question is a very satisfactory one, at least for architects in France. It appears that judicial decisions have established the law there that for his services in the construction of a new building an architect is entitled, in summing up the cost upon which his commission is calculated, to reckon all materials, whether old or new, and whether furnished by the proprietor or not, as if new and furnished by the contractor; the courts holding that the work and responsibility of the professional man, and his proper compensation, are the same in both cases. Moreover, if, as often happens in cities, the demolition of structures already existing on the ground forms a necessary preliminary to the construction of a new building, and if the architect of the latter includes in his service the direction of the work of taking down and sorting the old materials, and the provisions for the protection of the public, he is entitled in France, by a decision of the Tribunal of the Seine, to collect commission upon the cost of these operations, in addition to his fees for work upon the new building.—*The American Architect and Building News.*

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.

ROBERT MITCHELL, President, 807 Turk St., Box 26
J. WAGNER, 516 Kearny St. " 2
CRAWFORD FERRIS, 1723 Eddy St. " 20
JOS. SMITH, 2635 1/2 Harrison St. " 36
JOHN MCCARTHY, 2509 Folsom St. " 7
WM. DUNBAR, 27 11th St. " 14
GEO. RICHARDSON, 518 Ellis St. " 39
C. R. WORRELL, 888 17th St. " 5
J. G. LIEBERT, Treasurer, 330 Oak St. " 32
JOHN HUGHES, 318 Fremont St. " 21
J. J. O'CONNOR, 648 Minna St. " 19
M. B. RICHARDSON, 427 1/2 Oak St. " 1
MATT. MCGOWAN, 614 Linden Ave. " 18
JOHN CALVERT, 812 Hyde St. " 40
THOMAS BUTLER, 593 Ash Ave. " 28
ROBERT HIGGINS, 1724 Jessie St. " 13
JOHN DOWNS, 269 Minna St. " 18
J. HAFF, 516 Kearny St. " 6
G. D. NAGLE, 427 Montgomery St. " 24
N. R. TUCKER, 1411 California St. " 1
S. L. PLEACE, 634 Stevenson St. " 18
O. E. BRADY, 822 Valencia St. " 12
THOS. WHITE, 45 Minna St. " 4
J. J. CROOKS, 1929 Sutter St. " 9
JOHN COX, 608 Jones St. " 16
J. F. RILEY, Secretary, 833 Howard St. " 38
P. O. SULLIVAN, 543 Stevenson St. " 35
BYRON BROS., 11 26th St. " 34
JOHN BYRON, 19 Shotwell St. " 27
M. FARRELL, 139 1/2 11th. " 52
CON. HOLMES, 726 Hayes St. " 10
JOHN HANIVAN, 1705 Jessie St. " 15
G. W. KNEEDLER, 1013 Vallejo St. " 51
B. A. THOMPSON, Oakland. " 25
JOHN McDERMOTT, 124 10th St. " 33

PARTIES RENTING BOXES IN THE BUILDERS' EXCHANGE.

WARDEN & McCURE, Teamsters. Box 39
McVICKER & ROACH, Stone-cutters. " 8
REMILLARD BRICK CO. " 23
PAT. BRICK CO. " 29
CHAS. WARREN, Grader. " 37
L. E. CLAWSON, Patent Chimneys. " 2
A. E. BUCKMAN, Grader. " 42
JAS. E. WHITTIER, Asphaltum. " 41
DAVIS & COWELL, Lime and Cement. " 43
KENNY & McCUE, Graders. " 44

Portland—Continued Building Prosperity.

ONE would naturally suppose that the building boom of the "Star City of the North" would, at this season of the year, fall off to a mere nothingness. The climatic conditions of the weather are such that the rain descends in quantities sufficient to almost stop building operations. That such is not the fact is evident from the following list of improvements now in progress. Our agent has sent us only the more costly, as a full list, containing all the small jobs, would fill more space than we can spare.

Six-story and basement brick for the N. P. P. R. Co.; A., McKim, Mead & White; C., W. E. Holmes for the rough stone work; cost of present contract, \$100,000.

Third, corner D. Nicholi Bros. are having built a three-story and basement brick; A., J. Krumbein; C., Merchant & Bridges for carpenter work, and M. Owens for brick work; \$20,000.

Third, corner Jefferson. Two-story brick; O., J. C. Carson; A., J. Lo Romer; \$9,000.

Taylor, corner West Park. Architect W. H. Williams is superintending the erection of a \$10,000 two-story and basement frame for J. R. Foster; C., Sedge & Jenkins.

Eighteenth, near G. Two-story and basement frame; O., L. Sechtem; A., J. Krumbein; C., G. Gardner; \$6,500.

First, corner Clay. S. Harkins is erecting for J. Shade a two-story frame; \$5,500.

West Park, corner C. Two-story and basement frame; O., S. Loewengard; C., E. Kling; \$3,500.

Fourth, near College. Two-story frame; O., J. C. Curran; A., G. Marshall, Jr.; C., J. C. Wilson; \$2,800.

Eighth, corner B. Two-story frame; O., J. Stewart; C., J. Mahoney; \$2,000.

Hall, near First. Two-story frame; O., F. Homstrom; A., W. J. Graham; C., E. F. Staley; \$1,500.

North Fifteenth, corner S. Two-story frame; O., M. B. Cook; C., A. M. Young; \$2,500.

Fourth, corner L, East Portland. First National Bank is having built a two-story brick; A., Neer & Lo Romer; C., J. E. Mayo; \$9,000.

New Tacoma. Four-story brick; O., Tacoma Land Co.; A., McKim, Mead & White; C., F. W. Lewis; \$80,000.

Building News in Los Angeles and Vicinity.

Wilmington. One-story frame; O., Mrs. Alexander; A., Mr. Hall; C., Mr. Gougeon; \$2,000.

Celis. One-story frame; O., Wm. Wheeler; C., Mr. Hargett; \$1,500.

Olive. City Horse Car Co., stables and offices; C., Mr. Hargett; \$4,000.

Bath. Two one-story semi-detached cottages; C., Mr. Gougeon; \$3,500.

Main. Two-story and basement frame; O., T. E. Rowan; C., Mr. Gougeon; \$7,500.

Main. Two-story brick; O., Foster & Brown; C., not let; \$35,000.

Los Angeles. Two-story brick; O., Mr. Brown; \$10,000.

Two-story brick; O., Mr. Brown; \$8,000.

Los Angeles, between Second and Third. Two-story brick; O., Foster & Brown; C., not let; \$50,000.

San Fernando. Three one-story frame; O., Arnold & Straton; C., Arnold & Straton; \$1,000.

Spring. Two-story frame; O., Mrs. F. E. Howe; C., Arnold & Straton; \$3,000.

Hill. One-story frame; O., W. R. Hasson; C., Arnold & Straton; \$1,700.

Hill. Two-story frame; O., Mr. McCoy; \$2,000.

East Los Angeles. One and one-half story frame; O., Mr. Mathews; \$2,000.

East Los Angeles. One-story frame; O., Mr. Mathews; \$1,800.

The above are under the superintendence of J. Hall, architect.

Pearl. Two-story frame; O., M. Childs; A., Chas. W. Davis; C., J. Kindelburger; \$8,000.

Spring. Two-story brick; O., Mrs. M. Jones; A., Chas. W. Davis; C., J. Hargett; \$30,000.

Commercial. Two-story brick; O., J. Bosseranie; A., Chas. W. Davis; C., B. F. French; \$12,000.

Second, corner Fort. Presbyterian Church; frame; A., Chas. W. Davis; C., J. Webster; \$20,000.

Main. Three-story brick; O., L. J. Rose; A., Chas. W. Davis; C., W. H. Riggs; \$30,000.

New High. Three-story brick; O., L. J. Rose; A., Chas. W. Davis; C., W. H. Riggs; \$10,000.

Los Angeles. Two-story and basement brick; O., Smith & Heffner; A., Chas. W. Davis; C., D. Penman; \$10,000.

Los Angeles. Three-story and basement brick; O., Rees & Wessings; A., Chas. W. Davis; C., D. Penman; \$20,000.

Los Angeles. Two-story brick; O., Harper, Reynolds & Co.; A., Chas. W. Davis; C., D. Penman; \$8,000.

First, between Fort and Main. Two-story and basement brick (stable); O., John Foster, A., Chas. W. Davis; C., B. F. French; \$20,000.

Main. Two-story frame; O., T. H. Rowan; A., Chas. W. Davis; C., W. H. Riggs; \$5,500.

Main. Two-story frame; O., W. Maxwell, A., Chas. W. Davis; C., W. H. Riggs; \$7,000.

Fort. Two-story frame; O., N. H. Moore; A., Chas. W. Davis; C., B. F. French; \$4,000.

Pearl. Two-story frame; O., Ex-Mayor Toberman; A., Chas. W. Davis; \$5,000.

Washington. One-story frame; O., J. Dow; A., Chas. W. Davis; C., Mr. Pierce; \$4,000.

New High. Two-story frame; O., Mrs. Evarts; A., Chas. W. Davis; C., — Marsh; \$8,000.

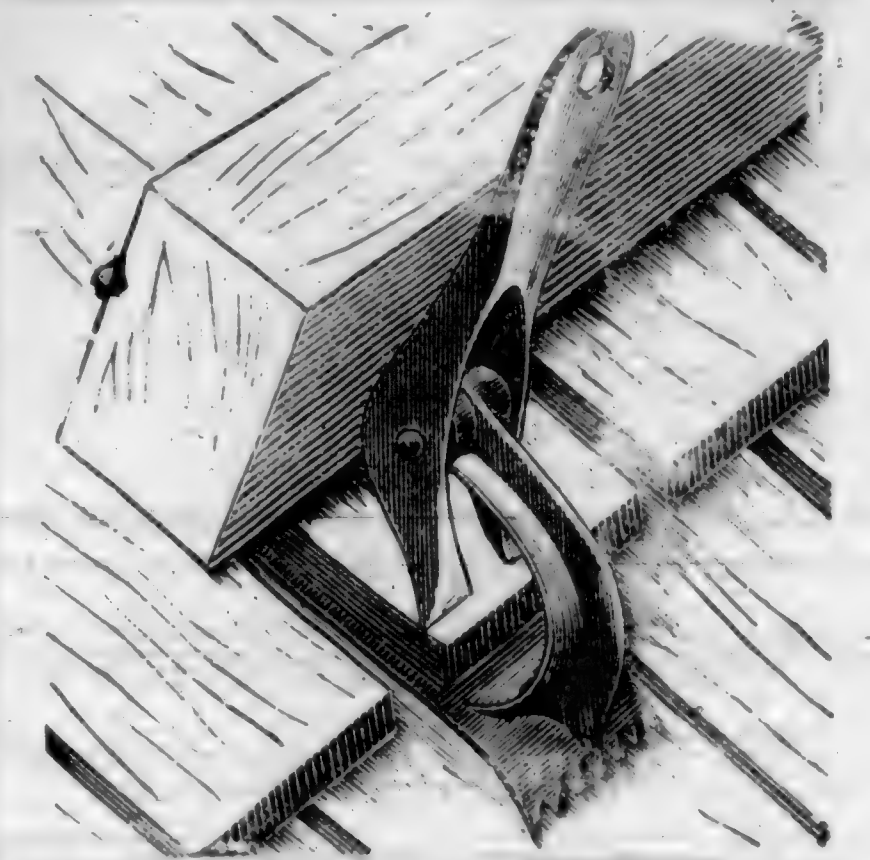
Anaheim, Drufus Block. Two-story brick; O., Mr. Drufus; A., Chas. W. Davis; C., S. Smith; \$20,000.

Canada Canyon. One and one-half story frame; O., A. W. Williams; C., T. W. Cox & Farnell; \$2,000.

Downey City. Two-story brick (Masonic Hall); O., Franklin Bros.; \$10,000.

San Bernardino. Two-story brick; O., A. G. Burt; A., Chas. W. Davis; C., Ely Davis; \$15,000.

KENNETT'S PATENT ROOF BRACKET.



NO MORE Leaky Roofs.

Saves Time, Material, and Money.

Simple, Reliable,

Durable, and Cheap.

THE BEST IN THE WORLD.

This Bracket is used to instantly secure a Scaffold or Staging on a Shingle roof.

Without the Use of Nails or Screws.

It is made of best Malleable Iron, and cannot be broken. The above illustration shows the Bracket partly under a shingle and a scantling, in position. By this construction it forms a clamp, and the more pressure there is against it the tighter it gets. The bracket is placed over a joint, so that it holds on to three shingles and makes it doubly secure, and obviates any possibility of slipping or of splitting shingles. The scantling lies close to the roof, so that loose nails and shingles cannot pass down and off the roof. It engages with thick or thin shingles with the same readiness and security.

It is the Safest Mode IN THE WORLD

OF FASTENING A SCAFFOLD.

It Cannot Slip or Give Way.

For Shingling, Repairing, or Painting a Shingle Roof, or in case of a fire to go on a roof it has no equal. It requires but a few seconds to change from one place to another, requires no nails, splits no shingles in taking up your scaffold, as in the old way; and thereby

Saves Time, Labor, and Money,

—AND MAKES A—

Stronger and Safer Scaffold.

We Have Been Appointed

Sole Agents for the Pacific Coast FOR THIS BRACKET.

Price, \$4.00 per Dozen.

In order that every mechanic on the coast may possess these Brackets, we will send a pair, post-paid, to any address, upon receipt of 75 cents. ADDRESS

G. H. WOLFE.

240 Montgomery St., San Francisco, Cal.

S. F. Chapter, American Institute of Architects.

THE regular monthly meeting was held on Monday eve, Dec. 10th. T. J. Welsh occupied the chair.

Committee on Incorporation reported that all necessary measures had been taken to effect said result, and they were simply waiting for a seal to be furnished, in order to complete their work.

Committee on Amendments to the Plumbing Law asked for further time, as it was their earnest desire to have the work well done.

Warren H. Williams was proposed for membership. Application referred to the usual committee.

Communications were received from the Sect of the American Institute of Architects, which after being read were placed on file.

A communication was received from the managers of the CALIFORNIA ARCHITECT AND BUILDING NEWS, stating that it was their intention to offer four prizes—one of \$60.00, one of \$50.00, one of \$40.00, and a box of drawing instruments—for the best four designs for a country dwelling, to be published in said journal. The managers requested a committee be appointed by the Chapter to determine the relative value of the drawings submitted in the competition. The president appointed the following named Fellows as the committee: Messrs. Sanders, Pissis and Mitchell.

A short discussion ensued upon the stand to be taken by the Master Masons and Builders' Association on and after January 1, 1884. It was the opinion of a majority of the members that, although at first it might seem awkward to make separate contracts for amounts slightly in excess of the amount adopted by the Master Masons, yet, in a little while, harmonious feelings between all the trades may be secured by just and impartial action among those most interested.

(We do not see why the masons have not the perfect right to the same privileges as are enjoyed by the carpenter contractor. One has as just a claim as the other in being the contractor of the building. But few carpenter contractors would take a job having the master mason as a principal, and why not vice versa? In many cases the cost of the brick work exceeds the carpenter work, and we do not understand why the latter class should be recognized as the supreme head of the work as far as the contract goes, collect all the payments, and pay the amount due the mason, the latter being a second party. In case of a failure of the principal contractor it is always the sub-contractors who have to stand the loss. The principal draws the money, and in dividing it to meet all the requirements of a contract he oftentimes remembers his own pocket first. We hope this question will receive a discussion between the parties most interested, and we will with pleasure publish such views as may tend towards a harmonious settlement of the questions involved.—EDS.)

Trade Discounts to Architects.

FOR some time past it has been the custom of manufacturers and dealers to allow architects a plumm generally known as "the trade discount." This is done when the articles are ordered directly by the architect, and the justification of the offer is made upon the fact that the discount is always at some one's service; the builder is not entitled to it, he merely places in the building articles ordered by the architect, consequently the only one to profit is he who gives the order. Another reason advanced for the offer is that an architect often has considerable trouble in examining the different inventions and manufactures of the same class, and no matter what his selection may be he is justly entitled to the "trade discount," being the only one who has had any trouble in the matter.

The question has been asked us, Are architects justified in accepting the offers thus made? Also, What stand does the Institute of Architects take upon this subject?

"The Institute of Architects has, from its foundation opposed the practice in toto as a point of honor, holding it to be manifestly inconvenient that the supervisor of building works should upon any pretence be allowed to involve himself in the supply of articles, the quality and price of which he is employed to check in the interest, the purchaser of his client. At the same time it is only fair to add that there are thoroughgoing men of business, as business goes, who still maintain the arguments first mentioned to be sound, and who fail to see why an invariable trade discount should be lost, or why an architect should spend his time upon the selection of cheap articles of taste without remuneration.

"To this, however, the principle adopted by the Institute would still seem to have an answer to give, namely, that whenever any special remuneration is due, it ought to be paid directly by the employer, who it may fairly be supposed, if he be one of those who prefer to take a tradesmanlike view of such matters, will be found ready to indorse his own opinions.

"The practice mentioned is one which we must expect to see developing itself more and more as the times change and the ways of business change with the times; but there are certain principles which ought never to be lost sight of in a profession like that of architects, such as these: That whatever is done must be done openly and above board, and that no payment can honorably be received except for work done by the recipient. The necessity for acting under any circumstances in any sort of underhand way we wholly deny."

Black Walnut.

BLACK walnut can be grown from the nut, producing a butt fourteen inches in diameter in as many years from the seed, as far north as Massachusetts. No tree valuable for its timber in cabinet uses, unless the black birch be so considered, can attain to that useful growth in that period of time in our northern climate.

Maples require twenty years before they become good timber trees; beeches and birches, fifteen years to attain to a diameter large enough to yield nine-inch boards; hickory should have a growth of thirty years; and cherry at least as much.

The cultivation of the black walnut might be made a source of profit, if only as an auxiliary to the ordinary farm products. It requires no particular care, makes an elegant tree even in its youth, and later offers an agreeable shade. The *Sewing Machine Journal* says:—

"One hundred acres of land, seeded to walnut trees, even if they reached maturity in fifteen years, would be more remunerative than many of the crops produced by fifteen of incessant toil. Besides, these trees might be planted and would thrive on spots which are really valueless for agricultural purposes, and while in the course of growth would serve as valuable aids to agriculture as wind-breaks and in other respects."

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 *Carpentry and Building* (\$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 *North Western Lumberman* (\$4.00), \$5.00 per annum.
- With *Scientific American* (\$3.20), \$4.50 per annum.
- With *Leffels' Mechanical News* (\$1.00), \$2.50 per annum.
- With *Decorator and Furnisher* (\$4.00), \$5.00 per annum.
- With *American Machinist* (\$2.50), \$4.00 per annum.
- With *The Wood Worker* (\$1.00), \$2.50 per annum.
- With *The Builder* (\$2.00), \$3.50 per annum.
- With *American Inventor* (\$1.00), \$2.50 per annum.
- With *Hall's Journal of Health* (\$1.00), \$2.50 per annum.
- With *Cincinnati Building Review* (\$1.00), \$2.50 per annum.

We will add to the above list from time to time, as our arrangements are perfected with the publishers. We are prepared to furnish any journal printed at the shortest possible notice.

All communications intended for M. J. Marion may be left at the office of his journal. We have received quite an interesting communication from him, but too late for this issue.

A Country or Suburban Home.

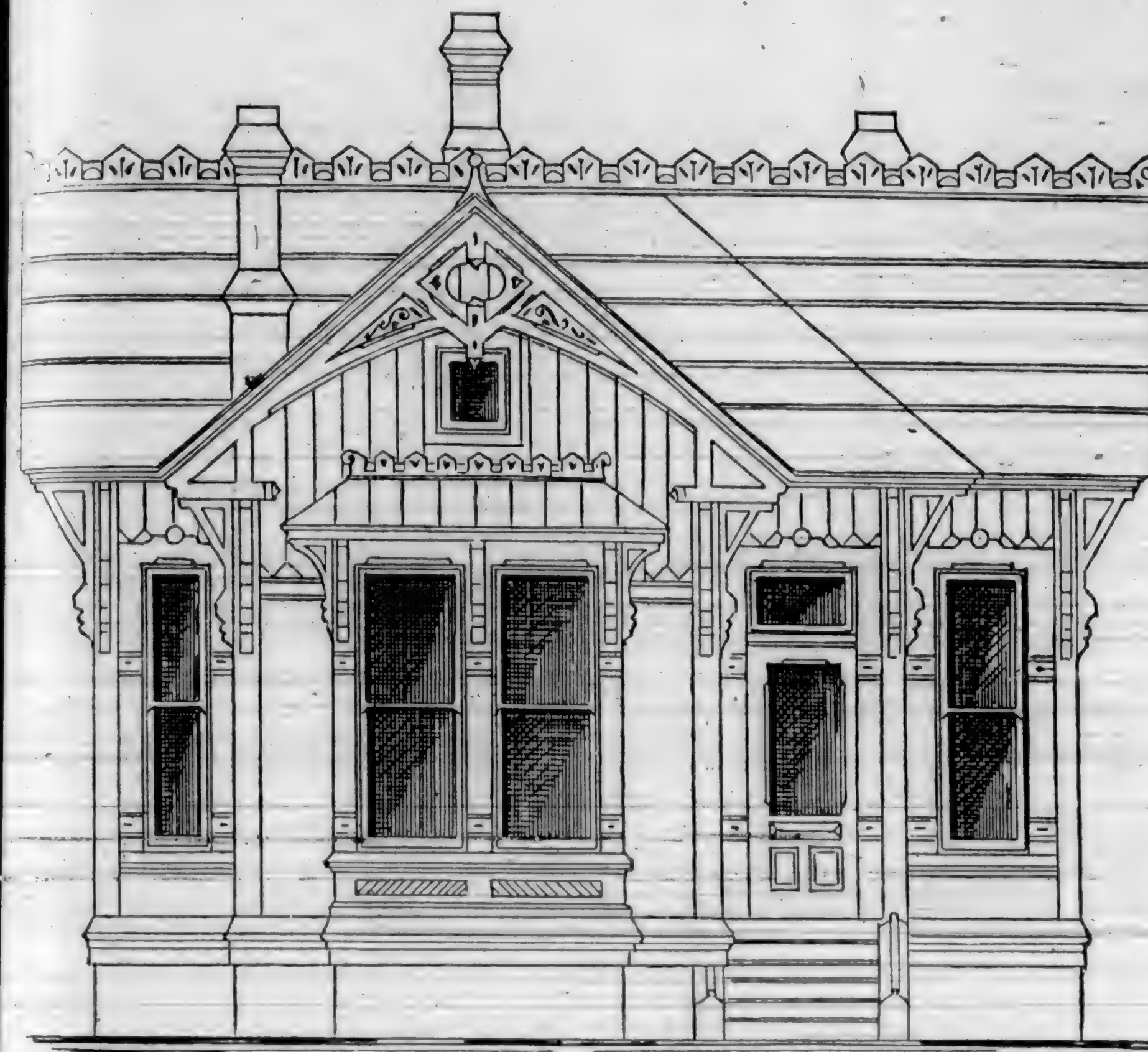
THE accompanying plans are intended, if carried out according to the designs shown, to give a very comfortable home for a small family. Its special features are well-lighted and ventilated rooms, closet room in abundance, and conveniences generally needed in this class of house. The w. c. is placed outside, and yet is easy of access. Bath room is well lighted, and the window is so placed that thorough ventilation is secured. If desired, the mullion shown in dining-room may be changed to a square bay window, similar to the parlor.

The plan carried out as shown, can be built for about \$2,800. This figure may be greatly varied according to style of finishes used.

Cost of Buildings.

WE frequently receive letters containing queries in regard to the cost of buildings, the plans of which have been given from time to time in this journal. Prices vary at different seasons of the year, and those given in the description of plans are the prices for which the buildings could have been erected at the time of the issue of the *Journal* containing the plan. About twenty-five per cent. would have to be added on the estimates given in 1880, 1881, and part of 1882, to correspond with prices at the present time. By comparing price lists, and allowing the difference, a correct idea may be gained of the different values.

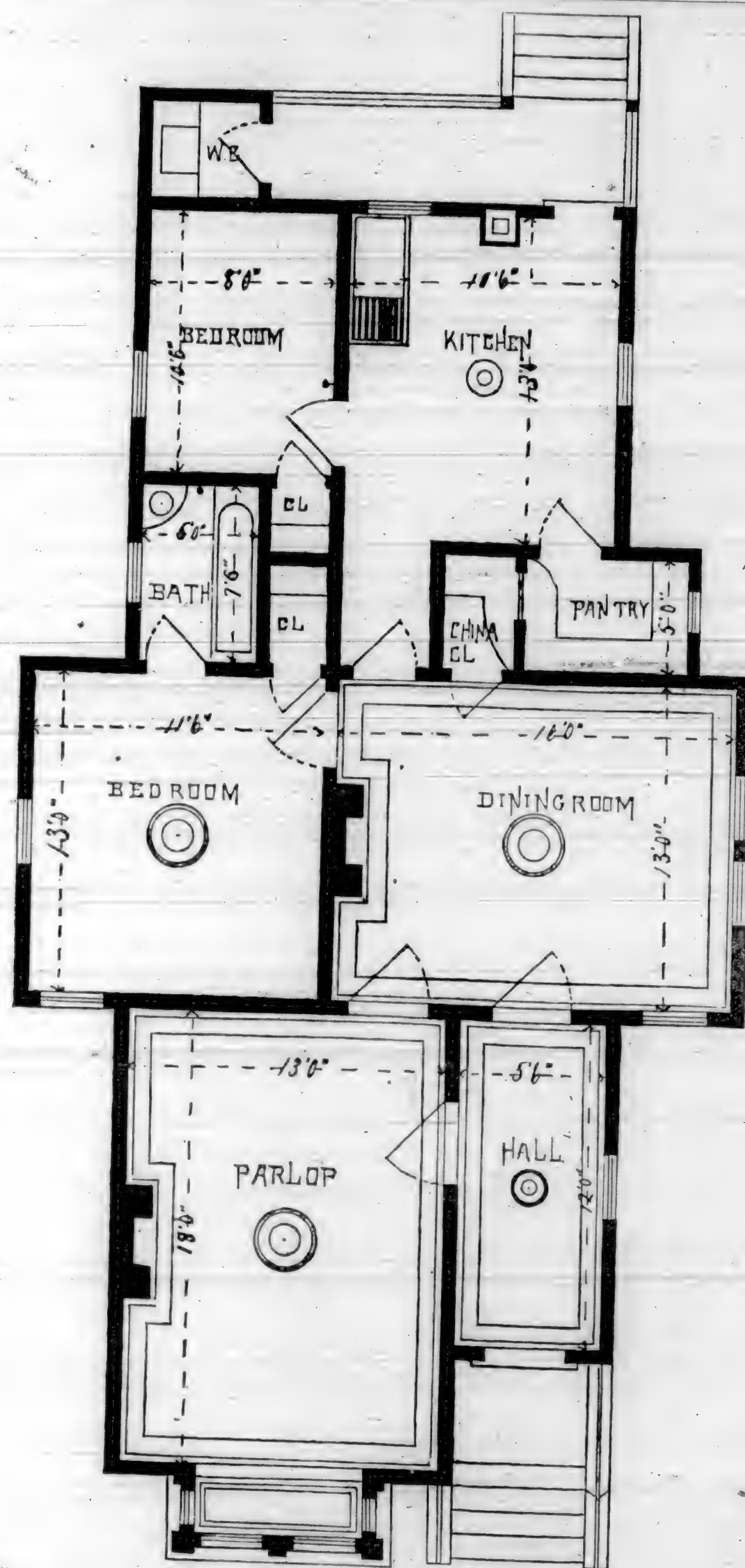
An old but good idea, and one not generally known, is to line the jaws of the vise with sheet lead when clamping saws for filing. If not so lined, the saw will vibrate and probably strip the file.



FRONT ELEVATION OF COUNTRY HOME, COSTING ABOUT \$2,800.



SIDE ELEVATION OF COUNTRY HOME, COSTING ABOUT \$2,800.



PLAN OF \$2,800 COUNTRY HOME.

Beware of Creating False Impressions.

The sound of saw and hammer is heard on all sides, and every man that can handle tools is pressed into the service, to meet the great demand for new buildings.

The above in italics is the gist of numerous articles selected from various country papers that have found their way to our sanctum, and we have purposely placed the words in a prominent position so that parties interested will have their attention drawn thereto.

A country paper to be successful must pay strict attention to the affairs in its immediate neighborhood. It is taken by people living outside of its jurisdiction, that they may keep the run of the local affairs of the town in which it is situated. When the news contained therein is found to be always reliable, it often receives subscribers from sources seemingly at variance with the object of the paper. We propose to speak of a few things in one interest only—that connected with building improvements.

In making statements in regard to new buildings, alterations, or other improvements, be sure that the true facts are stated and in a way not to mislead. A worthy mechanic called at our office not long since, and asked our opinion in regard to locating in a certain town. He had in his hand a local paper of the last issue prior to his call. To read the statements made therein one would imagine there was an immense building boom being experienced. Mr. A was erecting a business block; Mr. B, a comfortable dwelling; C, D, E, and F were making large additions to their barns. Lumber was being hauled for several buildings soon to be started. In fact the sound of saw and hammer was heard on every side, and men could not be had to do the work.

While our visitor was reading, his listener was simply dumb from astonishment. But a few days before we had been through that same town. The business block of Mr. A was 28x40, one story high, rustic front, sides boarded with rough lumber placed endways and battened, divided into two stores, separated by a board partition. One store was intended for a saloon, and the other anything it would rent for.

Mr. B's comfortable dwelling was 12x24, simply a two-room house, boards on end and battened. The large additions to the barns were simply sheds to cover the wagons, etc.; the lumber for the new buildings was similar to that necessary for buildings of the above description.

No doubt to the editor of that paper the work in sight was enough to make him eloquent in praising the business activity of his town. But he should have looked a little deeper and taken into consideration the fact that others besides his own town people read his paper, many of whom were on the lookout to locate in places where a reasonable activity prevailed. Reading the local notices as given, a mechanic would be justified in visiting that locality for the purpose of inquiring into its claims as a business center and offering special

inducements to the man who wieldeth the saw and hammer truly and well.

We could cite many instances where parties have been misled by the glowing accounts given by local editors, of immense improvements shortly to be commenced. It is not our purpose, however, to recapitulate. We would simply draw the attention of those who have charge of the local department of the various country journals, to have your statements so plain that there will not be the slightest chance of any one misunderstanding them. If possible give the cost of the improvements underway; for it is by this that the mechanic judges of the class of work being done. A business block costing probably a \$1,000 would convey at once to his mind just the kind of a block that could be erected for that amount of money, and he most certainly would not spend even a four bit piece for fares to get a job on such a block.

Remember that mechanics visit the libraries, reading-rooms, etc., especially to get information in regard to building in process of erection all over the State. Since this journal has endeavored to give reports from so many sources, our offices, at times, have been thronged with men inquiring for the best places to locate. Our information is largely obtained from a perusal of our many exchanges. Not wishing to lead others astray, we are ourselves not desirous of being wronged through reading a too glowing account of building improvements.

The Employment of Better Mechanics the Result of High Prices of Materials.

It may seem an anomaly but it is a fact that during the reign of high prices of material the contractor invariably seeks the high priced mechanic, and his reason for so doing is found in the fact that first-class mechanics are less apt to make mistakes and thus the waste of material, so common amongst inexperienced men, is greatly lessened if not almost wholly overcome.

When lumber, for instance, is cheap, or even when it is at a moderately fair rate, the contractor seeks to get the most work done at the least expense. On large jobs, even laborers are substituted in passing lumber to and fro. Apprentices are set at work doing that which should belong to the experienced mechanic. A few feet of lumber don't amount to much, and so but little attention is paid to the blunders made.

When, however, lumber is four and one-half cents a foot for surfaced and the finer grades, it becomes necessary for the principal to look after his employees, as it does not take the cost of but a few boards spoiled in cutting to more than offset the difference in wages.

High prices of material are a death blow to piece-workers. It is a notorious fact that these have-to-be-endured men are without consciences in their waste of material. If a floor is to be laid, their motto is simply anyway to get it laid. Rustic is cut with but one idea in their mind, to get it planted on as quickly as possible.

The same remarks are applicable to the plasterers and brick-masons' trade. We have been in buildings where the mortar was almost as thick on the floor as it was on the walls. This fact at once shows the inexperienced workman. It is surprising to note the number of half bricks that are found around some buildings. We do not by any means advance the idea that half bricks are equal to whole ones, but we do say that a good workman would so place them in a wall that no one could tell that they were used.

We were much amused the other day at watching a greeny building a chimney. Half bricks were tossed into the lot adjoining only to be picked up by poor Pat to be carried up the second time. The excuse the master (?) chimney builder gave us for throwing away every half brick was that it made too many joints, the one on top of the other.

First-class workmen always have been and always will be the cheapest in the end. In order to obtain their proficiency they must need study, and therein lies the fault of the cheaper men, they have no time to study. A journal devoted to their interests never receives their subscription, as they can never find anything in it excepting what they already know. To all such we would say, if such be the fact, suppose you try a change. Your old way evidently has been a failure, or else you would be receiving better wages. No matter what part of the country you live in, subscribe for and support your home journal published in your interests. Study it well; practice the good advice given, and in a short time you will be able to command the wages justly due to those who study the science of the various mechanical trades.

Hanging Paper on Damp Walls.

The Germans are utilizing a discovery for hanging paper on damp walls. It consists of coating a lining paper on one side with a solution of shellac spirit, of somewhat greater consistency than the ordinary "French polish," and then hanging it with the side thus treated to the damp wall. The paper-hanging is then performed in the usual manner with paste. Any other resin that is equally soluble in spirits may be used in place of the shellac. According to the representations, this process is found equally effective in preventing the penetration of dampness.

GLYCERINE GLUE.—A German chemist has discovered that the strength of glue is very greatly increased by the addition of one-fourth as much glycerine as glue.

Glycerine has many other uses, among which one of the least known is its property of removing pencil marks from paper in a very perfect manner. It may also be combined with starch and plaster of Paris, to form one of the most durable cements for various kinds of apparatus.

Cottages and Villas. Price \$6.00.
Practical Carpentry. Price \$1.00.

Competition Designs!

ONE HUNDRED AND FIFTY DOLLARS
Cash Premiums!

FOURTH PRIZE,
Box of Drawing Instruments.

In order to promote a general desire to excel among Architects and Draughtsmen in the preparation of drawings for this Journal we have concluded to offer the following premiums for the best 4 designs of a Country Dwelling, the successful plans to be published in the CALIFORNIA ARCHITECT AND BUILDING NEWS.

1st, a Cash Prize of \$60.00

2d, " " 50.00

3d, " " 40.00

4th, Box of Drawing Instruments.

Plans are to be for a house costing about \$5,000. Front and side elevations to be shown, with plans, and a detailed estimate of cost.

All plans to be in the office of the CALIFORNIA ARCHITECT BEFORE the 1st of May, 1884, in order that they may be presented to the S. F. Chapter American Institute of Architects at their regular meeting on May 2.

The Chapter appointed the following Fellows as a Committee to decide upon the merits of the respective designs submitted:—Messrs. G. H. Sanders, Albert Pissis, and H. D. Mitchell.

We make the above simply as an announcement of our intentions. Our January issue will contain full particulars in regard to the competition. We will be pleased to receive the names of those desiring to compete.

Address all communications in regard to the above to the Business Manager of this Journal, 240 Montgomery Street, S. F.

Country Architecture.

BY A. CURTIS BOND.

OUR illustration this month shows a sea-side cottage, erected during the past summer at Coney Island, one of the near-by bathing resorts of this city. The front we have shown is that facing the sea, the entrance being at the opposite side and looking upon the road. I would say that the small room opening upon the space beneath the bay-window and directly behind the post, as shown in the drawing, is used, in this particular house, as a dressing apartment, where the occupants of the house may prepare for the bath and run down to the surf, which is at the foot of the grounds, but a short distance away.

SPECIFICATIONS FOR SEA-SIDE COTTAGE.

MASON WORK.—Excavate for foundation three feet below present grade on water front, and one foot on road front, and twenty inches around walls for a stone footing course, also excavate for drain, etc., to connect with public drain; all sand and earth so excavated to be used for grading around house when finished.

Foundation to be built within six inches of grade, with good foundation stone, and center wall to be built up within ten inches of first floor to set floor beams on.

BRICK WORK.—All exterior work to be laid up with best quality face brick laid in red mortar. All inside brick work to be of good quality brick, well laid and neatly pointed. Chimneys where topped out above roof to be of face brick.

STONE WORK.—A neat sill of at least twelve inches to be put around entire house. Corners and trimmings of windows, as shown in sketch, and base and caps of chimneys to be of good quality. Sand or brown stone with neat sunken carving over windows as shown in sketch, column of bay window as shown, base and cap of column to be of above kind of stone, shaft of aberdeen granite, neatly polished to show grain between trimmer on first story; to be laid with rough stone neatly pointed with white mortar to show joints. Blue stone steps to first story under veranda.

PLASTERING AND LATHING.—Lath with good quality spruce laths well nailed—then plastered; good coat of mortar for brown coat, then a finishing coat; the first and second story to have hard finish; all the principal rooms on first and second story to have neat cornice, to be selected by the owner, also center as may be selected.

All mason work to be done in a workmanlike manner, and all material used to be of good quality as the market can supply.

TIMBER.—CARPENTER WORK. All floor beams to be 2x10 and to rest on brick wall at least four inches well bridged with good 2x3 spruce bridging, all studs to be 2x4, and all brick walls to be furred with good two-inch furring strips well nailed to joints of buttm.

DOORS AND WINDOWS.—Door and window frames to be made in the usual way of good seasoned one and one-fourth pine, windows to

be hung with cord and pulley, and latest pattern of sash fasteners, windows to be glazed with French plate glass in four lights as shown on sketch; all main doors to be one and one-half inch thick with neat panels, except closets paneled on one side only, front door to be two inches thick with raised panels, all to be neatly trimmed with neat moulded pine trimmings.

STAIRS.—Stairs where shown in plan with circular railing. Newel post at foot of stairs of such design as owner may select, with neat moulded hand rail and baluster neatly trimmed. All to be of black walnut.

OUTSIDE TRIMMINGS.—Bay windows where shown, with neat balustrade on top with turned balustrade brackets on angle of corner, with panel at base and arch brackets resting on stone column, a neat balcony on gable over bay window with balcony, with cross braces for balusters and with neat brackets to support all. Gable ends to be finished as shown with open scroll work in angle of circular truss; all to finish with tip neat brackets where shown on sketch for gable corners. Neat, galvanized, and gold tipped finials on all peak of roofs, of good neat style. Neat veranda on front with baluster around, and good stairs leading to grade.

WATER CLOSETS.—Where shown, set with bowl and trap with flush closet, the waste-pipe to connect with sewer.

PANTRY.—To be fitted up with shelves and drawers.

CLOSETS.—In chambers to have neat six-inch strips with hoes.

FIRE-PLACES, ETC.—Ranges set in kitchen with the necessary appliance for hot and cold water. Dining-room and parlor to have grates set in, with brass fittings, these two rooms to have marble or slate mantles as may be selected; all other rooms to have wooden mantles.

ROOFS.—French and slanting roofs to be covered with good quality blue slater, well nailed; French roof put on top to be covered with good quality charcoal tin, with ridges raised about ten inches apart, to regulate flow of water.

All the work to be done in a workmanlike manner and good material used.

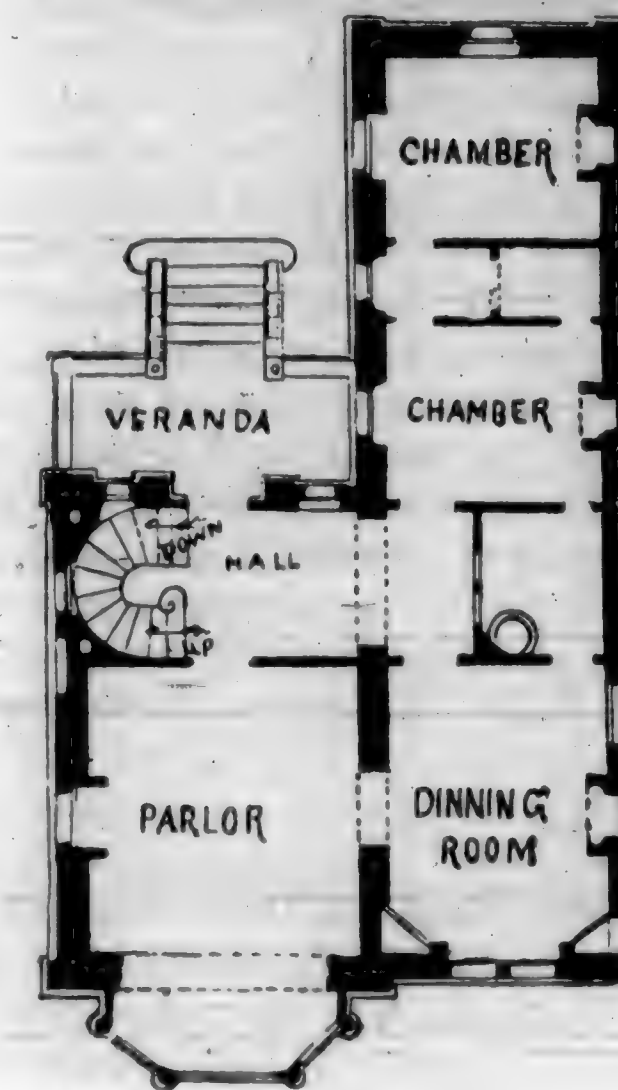
I presume every one is more or less interested in protecting his house against lightning, and upon this assumption by the New York architects, there has been carried on recently a general discussion as to the best method of protecting country houses, or in fact any buildings liable to be struck, from the disastrous effect of a thunder storm. It had become an occurrence of too frequent regularity in and about the city, and it was considered wise to devise some means to avoid it. The foreign architects have had their say in the matter too, and the result of their conferences seemed to bring them back very near to the point from which they started. There is no doubt that an exposed position, or a building with a great deal of metal in its construction, offers an opportunity for the lightning that it seldom misses. One instance within my own knowledge shows this. It is that of a church built upon a high hill; was struck no less than five times in one

year, and kept on being struck until a rod was put upon it, a precaution that at first was violently opposed by the minister, who had, it seems, an unaccountable sort of a conceit or lunacy that the holiness of the edifice would be a sufficient guarantee of its permanency.

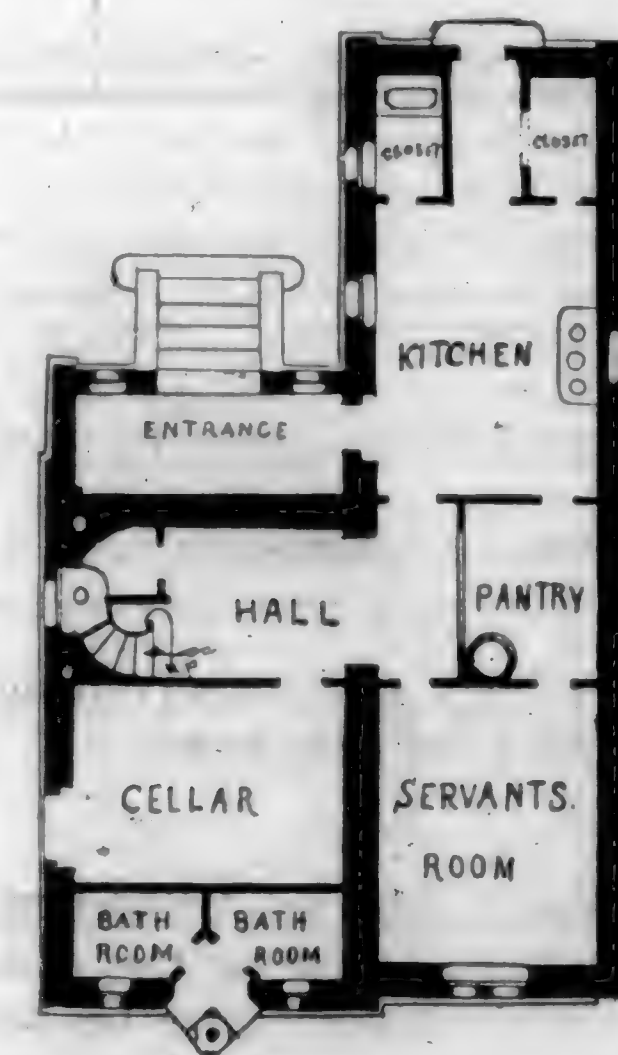
We cannot consider this question upon the basis of how and where houses *should* be built, but how and where they *are* built. For one person who would avoid a picturesque site from the fear that it might prove attractive to lightning, ninety-nine would select the spot for its other advantages. And for one person whose design for a house would be controlled by electric considerations, there would be an incalculably larger number who would regard economy, fashion, convenience, custom or other motives as determining the style of architecture they would adopt.

Metal enters, more or less, into every house, and it must be observed that it is rather the extent of metallic surface than the bulk that attracts the electricity. An instance is given where a shaft entered a house, tore the gilding from the cornices, twisted the moulding rod, partially fused the wire of the bell pulls, and yet avoided the inmates, of which at the time there chanced to be a goodly company. Smoke has conducted lightning down the chimney, and thus out through the fire-place into the midst of the occupants.

The first point therefore to insure safety in a dwelling-house is to complete the metallic connection of all metallic surfaces of any extent, on or within the building, the necessary connection being not only with each other but with the earth. At the same time it is desirable to protect the salient points of the house, such as pinnacles, gable-ridges, and, above all, lofty chimneys with metallic points, somewhat elevated above the rest of the building and in perfect connection with the earth. Some parties claim that these points should be elevated ten feet, others say thirty feet, and others only five feet above the point to be protected. But I think the settlement of this difference rests entirely upon the theory which attends the use of the rod, if it is for the purpose of attracting the lightning and thus a one terminating the electric storm, then possibly the higher rods may be preferable, but if the project is merely to protect the house if struck, and divert the current from the inflammable portions, then the ordinary sort points are all that is necessary. The clouds are often quite near to the earth, in which event every foot of rod is valuable, but if the normal condition of things be taken and the clouds are 1,000 or more feet from us, it is doubtful whether a score of feet even would make any material difference. It has been a mooted point whether the metal rod should be connected directly with the building or if it were not better to insulate it. It is claimed that the insulated rod is rather an attractor of the flash, and thus a means merely of diminishing the aerial electricity, than a house protector. There is one thing certain that during an electric storm the metallic substances in the



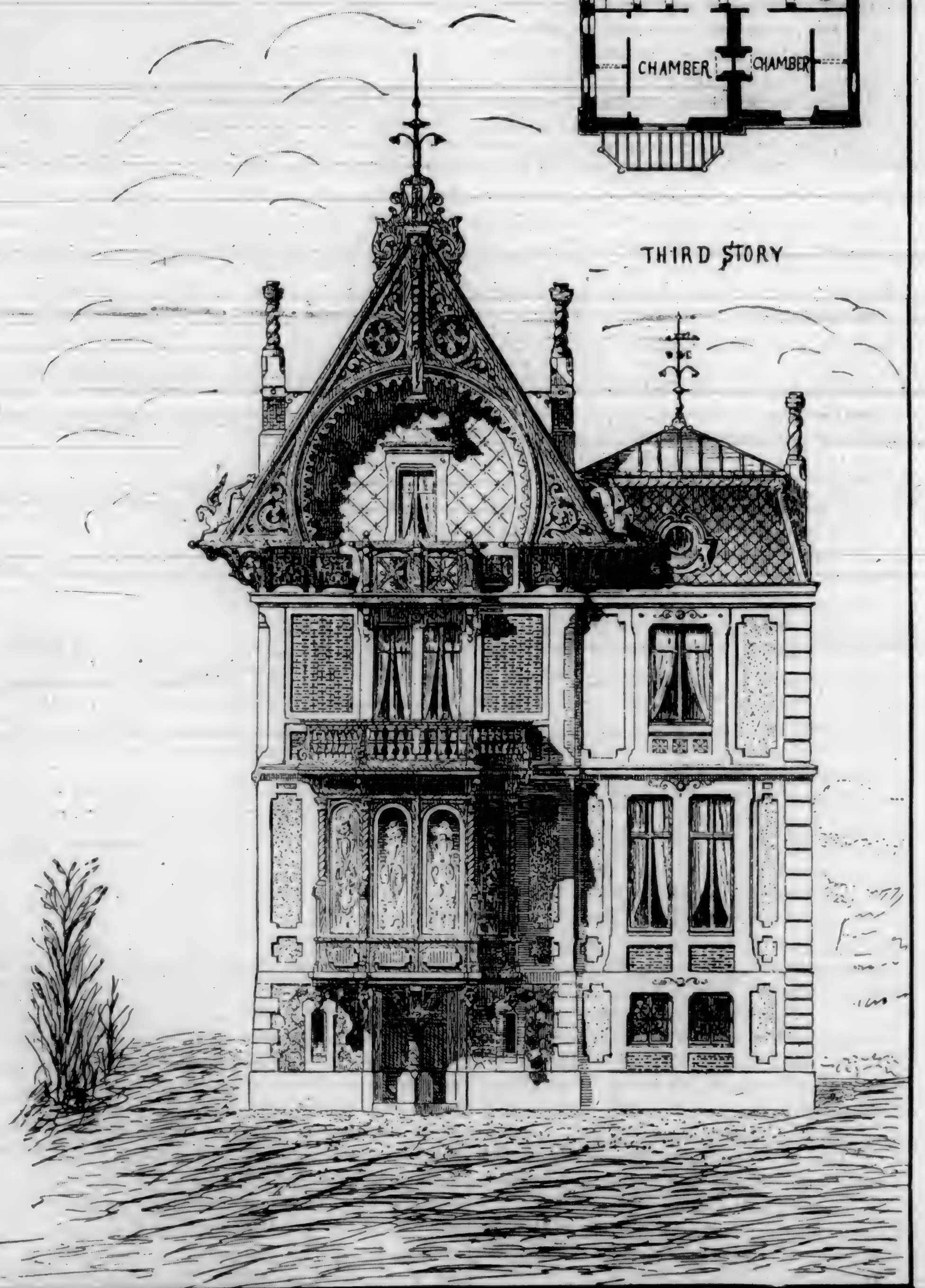
SECOND STORY



FIRST STORY



THIRD STORY



house will become charged, and if no means are adopted to draw off this charge, the danger is considerable and it is not certain that this danger would be averted by an external rod isolated from the house.

Bearing in mind, then, as it is necessary to do, the manner in which all conductors, in connection with the earth, become charged in a thunder storm, I think there can be no doubt of the propriety of metallic connection throughout.

Amateur Architects.

"WHAT is another one of the disagreeable things which besets you?"

"The patron who comes into your office with a plan he has 'made all by himself' and wants you to follow it. You ask him if he made the drawing to a scale, and he admits that he has not, announcing at the same time that won't make any difference, as he knows just how much room he has got and has planned accordingly. Then you suggest that nothing can be told from his drawing as to how the building will look, and he, getting mad, tells you to go ahead and if it does not look all right it will be his fault." "That's fair enough if he takes the blame."

"He'll take the blame soon enough, but he kicks like a steer when, after we have made a drawing to a scale, he finds his plan a failure, and that we ask pay for humoring his fancy. Why it would just break you all up to see some of the amateur plans and designs I have in my office."

So saying the architect escorted the reporter to his office, and fixing him comfortably in an arm chair, placed before him a large portfolio filled with amateur efforts. They were very interesting, embracing all classes of architecture from the Gothic and Gothic-Normandi to the most unique combinations of Grecian and Greco contours. Talk about the Detroit high school building, it is a nonentity compared with most of these efforts. Scale! there was none; but efforts at harmony and originality were visible everywhere. One particularly striking effect was shown where a dwelling house, having thirty-two feet of frontage, was concealed behind a portico sixty-one feet (according to the width of the building as shown in the plan) high and forty-four feet deep. Another charmingly original idea was a house with a front door sixteen feet wide, and windows eight feet wide, and a two-story house at that. Another plan, the designer of which evidently wanted an observatory, showed a cottage with a tower 116 feet high, according to the scale to which the draughtsman unconsciously worked. And so on, were discrepancies without number, and all of them ludicrous beyond measure.

"Just fancy trying to do something with this," said the architect, laying a drawing in water colors in the reporter's lap.

The plan, evidently the work of a lady, gave, in perspective, views of two sides of a proposed dwelling house.

If it were possible to build according to the design there would be a house of cut stone, with a double arch at one corner resting on two stained glass windows, each twelve feet wide, while a very early English chimney would pass through the arches and windows to a point in the basement, through which a doorway had been cut. Finally, surmounting the heavy stone arches which rest on glass supports, would be a tower balcony eight feet high and twenty-four feet square.—*Press Interview.*

"LA SEMAINE DES CONSTRUCTEURS" gives its opinion in a recent number upon a question which will interest a great many people besides its own readers. A letter to the editor relates that the writer, a clerk in the office of his father, who is a mason and builder, was asked by a thrifty individual to make plans for a building which he thought of erecting. The clerk made the plans and took them to the proprietor, who found them satisfactory, and desired that specifications should be drawn up, and the whole submitted for estimate to such contractors as the clerk might select. This was done, but on comparing the estimates it was found that the total estimate exceeded the limit of cost which the proprietor had contemplated; and the plans were modified to lessen the expense. The remodeled drawings had been made nearly satisfactory to the proprietor, and a final consultation was held between him and the designer, at the close of which he requested the latter to lend him tracings of the plans, in order that he might consider them a little further by himself. The clerk unsuspectingly did as requested, whereupon the proprietor had the drawings traced, and, sending back the originals with an insulting letter, proceeded to submit his stolen copies to another contractor for estimate, saying that the plan had been made by "one of his friends." The second contractor happened to be a relative of the clerk, and learning the circumstances, or recognizing the plan, took the liberty of putting the tracings in a place of safety, for restoration to the rightful owner.

THE inquiry which the clerk makes of the editor of *La Semaine* is, whether he can collect payment for his work on the plans and specifications, and, if so, at what rate? The reply is, it must be acknowledged, anything but encouraging to persons who desire to combine in themselves the functions of architect and contractor. In the editor's opinion, a proprietor who requests an architect to prepare plans for him implies in that request a promise to pay him the customary compensation for his trouble; and the architect, like the member of any other profession, has only to prove employment in his professional work to recover the usual remuneration. With a builder's clerk the case is very different. His business is not to make designs, but to help his employer in securing and executing contracts; and neither the proprietor nor other persons would ordinarily see, in the fact of his preparing plans and specifications for a building,

anything more than an effort on the builder's part to make sure of a contract which he might lose in the chances of competition if an architect were employed in the usual way. That this would be the ordinary understanding in such a case, in default of any agreement or stipulation to the contrary, is shown, as the editor thinks, by the simple consideration that no one, if it were customary to pay architects' fees to builders' clerks for such work, would choose the inexpert and irresponsible service of the latter in preference to the educated taste and skill, and greater pecuniary responsibility of the professional man. The editor is further of opinion that the preparation of plans and specifications by a builder's subordinate not only does not entitle the latter or his employer to compensation, but furnishes no ground for claiming a preference in the award of the contract; the understanding in such cases being, as he thinks, that the plans are made simply as an inducement to the proprietor to enter into the contract for their execution. They may accomplish their object, if the builder is fortunate, but if not, he is only entitled to his labor for his pains.—*The American Architect and Building News.*

A RELIABLE estimate lately made upon a certain quarter section of redwood timber in California was 32,000,000 feet. In comparing this with the pine lands of the Saginaw, Mich., district, it is stated that 2,000,000 feet was an extraordinary growth on the best of the land, when good forties were plenty, and 100,000 feet to an acre is called the biggest yield on record in the Saginaw region.

A NEW slate pencil sharpener introduced by a Chicago firm is merely a six-inch rule with V-shaped groove on two sides; they are thoroughly coated with the purest emery, and a hundred slate pencils may be reduced to powder by one of these little instruments before it is worn out. The price is so low that they can be given away as advertisements, the dealer's name being printed on them gratuitously if ordered in sufficient quantity.

PYATT'S PATENT ILLUMINATING ROOF AND ROOF BASEMENT.

Three different kinds of Artificial Stone Illuminating Tiles, as well as that of Iron made by the Undersigned, under the Hyatt Patent, with Jackson's Patent Improvements.

Owners of property using any of these improvements, as well as the makers thereof, unless manufactured by the undersigned, will be liable for damages for infringements.

P. H. JACKSON,
Attorney for Mrs. E. A. Hyatt,
P. H. JACKSON & CO.,

No. 2 California Street and 231 First St., S.

Two Dollars Per Annum.

WERE it reasonably possible to place the subscription price of this journal at a lower rate than two dollars per annum, we would cheerfully do so. But, in this city, we labor under many disadvantages not experienced by Eastern publishers, and which render it impossible to adopt a lower standard of subscription rates. The outlays to be encountered in this field of operations do not present themselves in other places, and it requires infinitely greater labor and expenditure to accomplish like results with those produced where all the surroundings and facilities are favorable and easy.

We think all our readers will notice the gradual improvement we have been making in regard to furnishing superior engravings. It has been our most earnest desire to introduce the improved process of photo-engraving, now so successfully worked in the East. In regard to the cuts made by our own process, the first representations of which will appear in our January issue, we would say that it has been the result of much study and perseverance, and we intend to so improve upon it that it will be unnecessary for any one to send drawings to the East for reproduction.

Every architect, draughtsman, student, and builder should possess a copy of this new work. Those parties not members of the profession, who are occasionally called upon to direct building operations, will be greatly benefited by a careful study of this work. We will send a copy of the above, and one year's numbers of the CALIFORNIA ARCHITECT upon receipt of \$5.00.

What Do You Think of It?

THE *American Cabinet Maker* notes a recent interesting legal decision. A cabinet maker in Michigan, in a written contract, agreed to make a walnut counter for one of his customers, but instead of using solid wood he took for the top and door panels, white wood, and stained it to imitate walnut. The customer refused to take the counter, and in an action to recover the price which was to be paid, the plaintiff offered evidence to show that it was customary in the trade to make walnut counters with such materials. He also offered to prove some understanding with the defendant, outside of the contract, by which it was agreed that the counter was to be made in conformity with the order. In this case (Greenstone vs. Borchard) the Supreme Court of Michigan decided in favor of the defendant, saying that no evidence could be given outside the contract to contradict it, and that no custom could be proved that white wood stained top and door panels to a counter made a walnut counter.

The *Art Amateur* for December is a number of holiday size and excellence. It contains numerous working designs, fine illustrations of Derby porcelain; practical articles on decoration, needlework, and china-painting; correspondence, literary, and editorial notes. It is impossible to speak too highly of the varied excellence of this superb publication. Price, \$4.00 per annum.



Architects, Contractors, Carpenters, and Mechanics generally are respectfully requested to furnish us items of interest for this column. We will gladly answer any and all questions pertaining to the architectural and building interests. If illustrations are necessary to explain your ideas send us a sketch of them and we will make the cuts.

Cut-off Saw for Lathers.

A CROSS-CUT saw is an indispensable tool to the lather for cutting lath in large quantities for short spaces, and for rigging up platforms to work on, and for cutting supplementary studs or strips where such are necessary. The saw should have rather coarse teeth and have plenty of set. Usually the lather thinks that almost any old, used-up saw is good enough for his purpose, and we find him struggling away with all his strength, cutting through a bundle of lath, when, if he had a saw that was worth anything—as a saw—he would perform his labors with about one-half the effort, and in one-third the time. It is all wrong to think of being able to work satisfactorily with inferior or imperfect tools. There is no economy in using tools of this kind, and any lather who fancies he is going to make or save anything by making use of an old buckled, mortar-stained saw, makes a terrible mistake. Get a good saw and keep it in good order, and it will pay you in two weeks.

WHITING is made by reducing pure white chalk to a fine powder. It is mixed with water and size and used for whitening ceilings and inside walls. It will not stand the weather.

MORTAR for the plasterers' use should be well made, and the following rules should be strictly complied with: 1. The lime should be thoroughly slaked, and brought to a paste or putty state. 2. It should remain in the mortar bed until it is perfectly cool, before mixing in the sand and hair. 3. Good mortar can be used with safety eight or ten days after it is made, but in no case should it be used before it is six days old.

[Some authorities say it is best to use mortar for plastering within three or four days after it is first made. They claim that in mortar which stands ten or more days before using, the lime loses a portion of its strength, and the mortar becomes deteriorated thereby. This to a certain extent is true; but, notwithstanding the loss of strength by the lime, and the consequent deterioration of the mortar, every observant plasterer knows that walls coated with mortar made two or three weeks previous to using, stand better than those coated with

"green," or freshly-made mortar. Newly-made mortar, immediately applied, frequently causes the walls to chip, crack, and become mottled. Mortar well tempered and as well seasoned works better and cooler than hastily made new mortar, and invariably gives better satisfaction. Colonel Gilmore, quoting from Vicat, and apparently indorsing the statement, says: "It was supposed, for many years, that the longer lime was slacked before it was used the better mortar it would make. Recent experiments prove, however, that this is not the case with a mixture of fat lime and sand only. Better results are obtained with such mortars if the paste be mixed with the sand as soon as the slaked lime has become cold, and care should be taken to use no more water, in the process of extinction, than may be required to produce a thick pulp."—*Ed.*]

The above extracts are from a new work just published, entitled *PLASTER; HOW TO MAKE AND HOW TO USE IT*. We will send a copy to any address upon receipt of \$1.00.

A WRITER says: "The first boring-tool may be assumed to be an awl of some kind. Pliny states that Dedalus invented the gimlet in 1240 B. C. It was destitute of a screw point, but it may have had a hollow pod, and a cross-head forming a handle. Awls are shown in Egyptian tombs of 1706 and 1490 B. C. The screw point was added to the gimlet in course of time, and within our own recollection the twisted shank, which makes it self-discharging. The hint was taken from the auger proper, which may be called a magnified gimlet, now that their specific features have become so closely assimilated in form and function. The auger (*terebra*) was a Greek tool.

From the early descriptions the auger seems to have been considered a shipwright's tool. It formerly had a curved sharpened end, and a concavity to hold the chips; this was a pod auger. To this a lip was subsequently added for some kinds of boring, and in course of time the depression grew into a spiral, which allows the chips to escape while the boring proceeds, instead of withdrawing the tool as the pod becomes filled. The twisted auger is the American invention, and was made by Lilley, of Mansfield, Conn., about the beginning of the present century, and afterward by Gurley, of the same place.

Augers may be classified as augers, annular augers, taper augers, augers with secondary bores, reamers, or countersinks, or having expansive cutters.

COMMUNICATIONS from all parts of the country are greatly desired, and will be highly appreciated. The fullest information possible will be cheerfully given to all parties seeking the same through this office.

N. C. WALTON,
Asphaltum and Asbestos Roofing,
219 MISSION STREET,
SAN FRANCISCO, CAL.

THE MEXICAN CALENDAR OR SOLAR STONE.

A Lecture Delivered Before the Academy of Sciences and the Geographical Society of the Pacific, on the Nights of the 19th and 27th of November, 1883.

BY EUSEBIUS J. MOLERA.

THE monument bearing the title of this lecture is, on account of the beauty of its design and its size, the greatest and most interesting of Mexican sculptures.

Many Mexican antiquarians have diligently endeavored to solve the mysteries pointed out by the hieroglyphics of this stone, but though a great deal of erudition and research has been shown, the history and meaning of it is yet an unsolved problem.

We shall see to-night that though the theories about the several pictures represented in the stone and their interpretations abound, they are supported only by very controverti-

between the middle figures and the left, somewhat similar to footprints, the act of motion, and the rectangular figures on the extreme right the sign *cali* or house, which, with the ornaments, represents school or temple. Finally the fifteen dots under the middle figures represent the age of them.

We can imagine by this sample how difficult it would be to find out *a priori* the meaning of such picture.

The difficulty is increased, inasmuch as though preserving the general characteristics of the d-lineation of an object, they changed it in all its details. Besides, the same object had different representations, according to the special function that it might perform. We have no truly Mexican chronology; though the history of the Mexican empire scarcely embraces two centuries, we have no fixed dates for any of their events, each writer changing them according to his theories and ideas.

The sources of our information are not authentic, as all the records prior to the conquest

with one caused to be built by King Axaya-catl. All these authors have made mistakes in their drawings of the stone, and on those mistakes have made most learned dissertations. Gama reverses the position of the sixth figure on the zone of the days of the month. Humboldt, who copied from him, shows a great deal of learning in explaining how this should be the case. Finally, Professor Valentini tells us that the mistake has been made in the tenth instead of the sixth. The zone following the next in Gama has too many elements and the two last zones are also mistaken, as well as in other parts of his drawing.

The writers following Gama have preserved Gama's mistakes and added others of their own.

Our fellow-townsmen, Mr. H. H. Bancroft, with a degree of intrepidity worthy of a better cause, in the description of the stone in his "Native Races of the Pacific Coast," makes this bold assertion: "Gama, Gallatin, Humboldt, Dupaix, and all others who have copied from them, do not represent the characters on this stone as they really appear. By a photograph taken by M. Charnay, of which the cut on the next page is a copy, it will be seen that all the figures, days as well as parallelograms, are reversed on the representations given by the above-mentioned authors. That is, the engraver, when making his tracings, did not reverse the figures before drawing them in the stone, an error corrected in the following cut. Therefore, instead of running from right to left, the days really run from left to right."

This statement is at variance with the facts in every particular; in the first place a simple glance at a photograph shows that Mr. Bancroft's cut is wrong, not only by his figures being reversed from right to left, but the skull, for instance, is upside down; and in other parts is at fault. In fact it is a reproduction of the cuts of the authors he names with the additional mistake of reversing it.

Mr. Chavero reproduces Gama's mistake in reversing the skull.

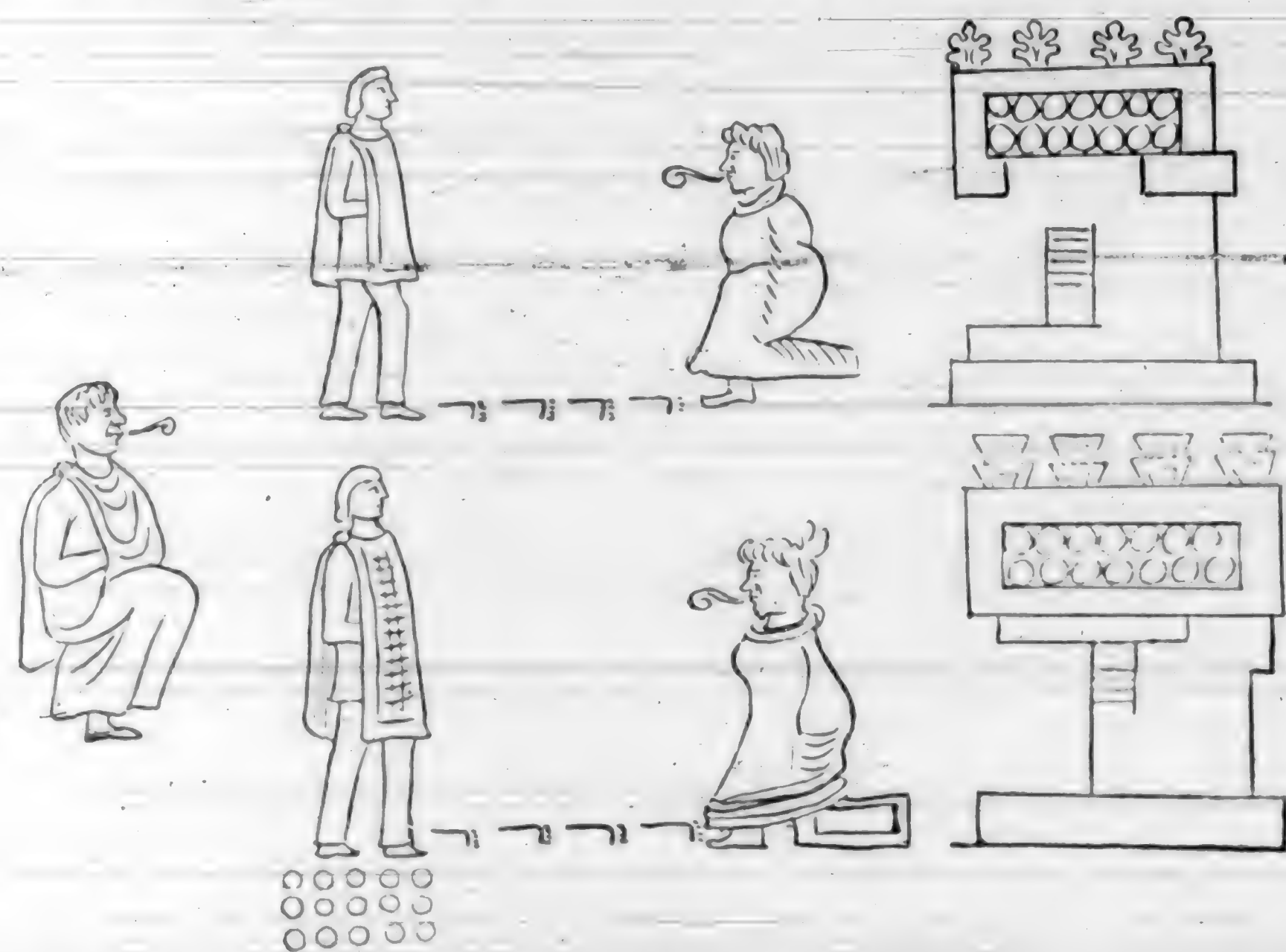
He thinks that the number of days in the year are to be found on the dots close to the sign *acatl* around the stone, but, being in need of five dots representing the five *nomtenti* days, he cleverly introduces them in his picture, four on the right and one on the left of the two heads below, though in the stone there are only two on each side.

Professor Valentini's picture, accompanying his description of the calendar stone, contains also several mistakes. The representation of the sun's face is altogether erroneous. He puts a tentel, or lip-stone, in the under lip, when in reality it is the protruding tongue as in the two heads below. The tongue itself he embellishes with many dots. In the forehead he introduces the name of the sun god *Atlatl*; he sees braided hair in skeins, where only the coarse hair of the Indians is represented, sunken eyes and lineaments of extreme old age where the lines of the god's mask are represented by the artist.

The sign *acatl* he transforms in *tetlaxoni*, besides other minor mistakes.

If we consider that in a single dot or small line many times our authors hang very important parts of their interpretations, it will be apparent the importance of giving, first of all, a faithful copy of the monument to be described, and will strike any one that no greater care has been taken in their representations.

The painting before you is a full size representation of the so-called "Mexican Calendar Stone," made by me from an enlarged photograph one-fourth of the full size, and drawings prepared by me in the city of Mexico from the stone itself. I believe it to be the



ble facts. In many instances, starting from a false supposition, the most elaborate conclusions regarding the state of knowledge of the Aztecs are derived. In other cases, after having propounded a pet theory, the facts are twisted by introducing or omitting portions of the hieroglyphics, committing what we might call petty archaeological frauds.

The difficulties to decipher Mexican antiquities are, no doubt, very great. In the first place the Mexicans had no phonetic writing, as we use, all their records being kept by picture writing and by tradition. My meaning will be clearer by showing you one of such pictures. The picture here shown is taken from the Viñes collection. We see on the left a man in a stooping position; in the middle two more men standing, and on the right two men stooping. Before the mouths of the stooping men we see a few lines drawn, and under the standing ones fifteen dots or small circles. We also notice on the extreme right of the picture two rectangular figures; the whole of the picture meaning that a man is sending two young men fifteen years old to school, the stooping position indicating the act of bowing or saluting; the lines before the mouth the act of speaking; the lines below,

were destroyed. The several *codices* made by order of the Spanish Kings and Viceroy, though very valuable and made with all the pains possible, still were made by Indians, who had seen few events of their own history, and had to trust to their information and belief.

The first histories after the conquest were written mostly by priests, who, with their zeal to convert the Indians, exaggerated, no doubt, the atrocities of the aboriginal religion, and by endeavoring to attract the Indians to them exaggerated also the cruelties committed by the military.

It will be conceived, then, that many of the descriptions of the Mexican antiquities are only more or less reasonable theories.

Don Antonio de León y Gama, who was an eyewitness when the stone was unearthed, was the first to describe it. He has the merit of having given the first interpretation. He, however, erroneously supposed it to be a calendar, an astronomical instrument, and a sundial. Alexander Von Humboldt, Albert Gallatin, Brantz Mayer, and others, have followed Gama. Alfredo Chavero, on a suggestion from Fernando Ramirez, and after him Professor Valentini, have tried to identify this stone



THE MEXICAN CALENDAR STONE, ONE-TWENTIETH IN SIZE OF ORIGINAL.

only one ever made of that size, and no pains have been spared to make it true in all its details. The original and this copy are eleven feet nine inches in diameter, and the weight of the stone is about twenty-four tons.

I will now proceed to describe the stone, making you acquainted first with that by D. Antonio de Leon y Gama, which is as follows:—

"The Mexican Government, having ordered to level and pave the principal square in Mexico, while digging some of the trenches for the sewers, the stone known as the Mexican Calendar Stone was found very near the surface of the ground, eighty yards to the west of the second door of National Palace and thirty-seven north of the flower market, on the seventeenth day of December, 1790.

Two of the Cathedral Canons, D. José Uribe and D. Juan Gamboa, commissioners for the building of the cathedral, asked permission to place it in one of the walls of one of the cathedral towers. The permission having been granted by the Viceroy, it was placed in the tower looking west, where it remains to this day.

The principal god worshiped by the Indians was the sun, not only when it shines in its handsomest radiance, but also during eclipses and at night. They represented it in human shape and built splendid temples to it, not only over the famous pyramid at Teotihuacan but in the interior of the principal temple at Mexico, named Cuauhtlicalli. In Mexico they made many celebrations during the year in its honor, which the King and the nobility attended. The King used to retire for four days into an apartment called Hueyquauhxicalli, or Quauhxicalli, and made penance by fasting and otherwise. During this celebration, which was one of the principal, they sacrificed many captives. This feast was named Netonatiuhqualo, or eclipsed sun, and literally the unfortunate eaten sun (as represented in the picture here shown).

They had many more celebrations, but the biggest was that in honor of its sign Nahui Ollin Tonatiuh, that is the sun in its four motions, accompanied with the via lactea, which they called Citlalinyue or Citlalcueye, which happened in the sixteenth week of thirteen days.

The statue before which the sacrifices were made on the day of Nahui Ollin is the same as the one represented at the center of the stone we are going to describe. It is a monument which contains many of the Mexican epochs, as it points out many of the Mexican celebrations; it was also a pattern which showed the various sun motions in its declination during 260 days of the lunar year, from the equinox to the day that arrived at the Tropic of Cancer and returned to the equinox; that is, the interval spent between the vernal equinox to the autumnal one. It also served as a sundial, by means of which the priests knew the hours they had to perform their ceremonies, by means of sticks or gnomons, as we will see later. In this stone it was represented one-half of the yearly solar motion from Aries to Libra, and the diurnal motion from sunrise to sunset.

From what is left of the outer part of the stone, it must have been originally a rectangular parallelepiped. The principal face is square. The wrought part of the stone is not placed at the center of the stone, but a little to the right. The diameter of the circle of the wrought stone is about four yards, and the edge of it nearly coincides with the edge of the stone. It means that there was another stone, which, together with this, represented all the fests of the Mexican nation.

In the discovery of this stone it is observed the same as it is found in the Roman literature in the six books of Ovide, which contain

one-half of the year. The way in which this stone must have been placed is on a horizontal plane, vertically, looking south, with a direction east and west.

The edge of the stone has some ornament without any meaning and about one foot thick, but the figures on the face require an elaborate description, which we are going to give.

At the center of the stone there is seen the sun's picture as represented by the Indian artists. The eight principal beams are the ones represented with the letter R, four of which are over the places which mark the days by fives, and the other four are covered in part by the same divisions. The letter L shows the other eight beams which they also used to ornament the sun's picture, as can be seen in the picture called Tonalamatl. There are also around this circle of divisions little half-circles the same as those over the beams, and they mean the light that surrounds them. To the sun's face join the four squares A, B, C, D, which, together with circles E and F on the sides of the triangle, I on top, and the appendix H at the bottom, form the picture I B E C H D F A, by means of which they represented the sun's motion, and adding the four numeral characters a, b, c, d, it represents the sign Nahui Ollin Tonatiuh. Inside of each of the four squares is represented one of the signs of the days also marked with the number 4. The one in the square A is the head of a tiger, which, together with the number 4, represents the day Noh-Ocelotli. In the square B is

found the hieroglyphic air or wind dedicated to the god Quetsalcohuatl, which was painted at the door or entrance of its temple, and, together with number 4, represents the day Nahui Ehecatl. In the square C is shown with the same number 4 the day Nahui Quiahuitl, with which sign they represented the god Tlaloc, or god of the rain, and finally in the square D is found the hieroglyphic water, which, with the number 4, represents Nahui Atl. It follows that the sun is here represented under the sign and day of the second week of thirteen days of the Tonalamatl, to which corresponds the number 4 and symbol of the solar motion, that is, the day Nahui Ollin, and the signs of the other four squares to the days of the other week of thirteen days in which corresponds the number 4 in the same Tonalamatl, or second calendar. This picture had its origin with the ridiculous fables of the Mexicans about the sun, which they preserved in this picture of Nahui Ollin. According to a manuscript, by D. Fernando Alva Ixtlixochitl, they believed that the sun had died four times, or that there were four suns which had ended in four ages, and that the fifth sun was the one now shining.

The first sun lasted 676 years, at the end of which, in a year called Acatl, when the sun was at the sign Nahui Ocelotl, men were destroyed from failure of crops, and they were killed and eaten by tigers, which were also finished together with the sun, the destruction lasting thirteen years. The second age ended with the second sun, supposed to be when it was on the sign Nahui Ehecatl, in which, by hurricanes, trees and houses were destroyed, carrying away men, some of whom were converted into monkeys. This destruction happened in the year ce Tecpatl, 364 from the first one on the day Nahui Ehecatl. In another year, named also ce Tecpatl, 312 years being elapsed, the third destruction took place, when the sun was at the sign Nahui Quiahuitl, all men were destroyed by fire, and became birds. Finally the fourth destruction happened with the flood, in which all men perished under water, and were converted into fishes. This destruction, they say, was 52 years after the third, in the year called ce Cilli, on the day Nahui Atl. The circular

figures on either side contain a kind of paws, which refer to the inventors of the Tonalamatl, Cipactonal, and Oxomoco, which were painted in ugly shapes like eagles or owls.

The angle I points out the first division of the twenty days of the month which are dedicated to the sun, or the beginning from where they must be counted, as the Indians always counted from right to left, the same as the Hebrews do, and the reverse of our custom.

No. 1 is the first symbol of the year, and is the sign Cipactli, which is represented differently in different calendars, but all agree in a fish with a kind of sword or bone at its nose. No. 2 is Ehecatl. It is the same figure as the one represented in square B, which is named Quetzalcoatl. No. 3 is a house, Calli, which is also one of the four signs with which they represented the years of the side. No. 4 is a lizard, Cuetzpalin; No. 5 is a snake, Cohuatli; No. 6 is a skull, Miquiztli; No. 7, a head of a deer, Mazatl; No. 8, a rabbit's head, Tochtli, which is also a hieroglyphic of the year; No. 9, water, Atl, which is similar to square D; No. 10, a kind of dog, Itzcuintli; No. 11, a monkey's head, Ozomatli; No. 12, a banded grass, Malinalli; it is the shape of a god of the name Macuilmalinalli; No. 13, a reed, Acatl, which is also one of the signs of the year; No. 14 is a tiger's head, Ocelotl, the same as square A; No. 15 is an eagle's head, named Coauhtli; No. 16, another bird's head, named Cozcaquauhtli; No. 17, the motion of the sun, Ollin Tonatiuh, the same as is seen at the center of the circle; No. 18 is Tecpatl or flint, one of the hieroglyphics of the year. No. 19 is Quiahuitl, rain, with the sign they represented Tlaloc, another of their gods, with the same shape as in square C. Finally, No. 20 represents a flower, Xochitl.

There are no numerals inside of these figures, but there are on the circle around them, where can be found 260 corresponding to the twenty weeks of thirteen days of the second calendar or moon's account.

The pointer, which rests on the signs Cipactli and Xochitl, ends at the outer circle, pointing at the division T, in which there is the symbol Acatl, with thirteen dots, which means that the stone is constructed for the thirteenth year of the fifty-two, but not for the others, as they change on account of losing one day every four years.

The rest of the outer circle represents the milky way, which the Indians called Citlalinyue, a sign which they thought had influence on the sixteenth week of thirteen days of the Tonalamatl, in company with Ollin Tonatiuh, where it is seen similarly represented. The two heads on the lower part of the circle represent the knight of night, named Yohualtlenhiti.

I do not know what are the figures around marked with the letter V, though I think they represent clouds. At both sides of the triangle I, are seen two figures marked with K and G. The one with letter G is a flint similar to the one with No. 18, and means the day ce Tecpatl, the beginning of the tenth week of thirteen days of the Tonalamatl, when they had a celebration in honor of the flint, which they called Textecpatl.

The figure M is Ome Ozomatli, or monkey's head. Here follows a very elaborate description of the stone as an astronomical instrument and sun-dial, based on a system of eight sticks or gnomons, which were placed in as many holes placed at equal distances from one another in the stone, around its outer circle. In the stone there are no holes deep enough to support a stick, much less eight of them, and still less equally distant. There has never been found in the ground or elsewhere, or has been any reference made in any author of another stone equal to this, therefore the

astronomical system founded by Gama, which was based on the supposition of the eight gnomons with the two stones, falls to pieces, as well as the glowing accounts of the high attainments of the Indians in practical astronomy.

It is not a calendar; it contains only the circle of the days of the month; but it does not contain the circle of the year nor the circles which they represented as the ones shown herewith.

Señor Alfredo Chavero, perpetual Secretary of the Geographical and Statistical Society in Mexico, is, after Gama, the one who has shown the greatest amount of erudition in describing the Calendar Stone. He has the merit of having proved, on a suggestion from Don Fernando Ramirez (one of the best Mexican antiquarians), the erroneous ideas of Gama and his followers, and that the so-called Calendar Stone was a quauhtlicalli, dedicated to the sun, and upon which war prisoners were slain, and erroneously, in my opinion, supposed to have been wrought under King Axayacatl.

In his *Essai on the "Calendario Azteca"* he quotes Father Duran, the historian, as follows:—

"The King Axayacatl was also busy in working the famous and largest stone, very elaborated, where the figures of the months and years, days and weeks, were represented with such detail, worthy to be seen. Such stone many of us saw in the large square near the canal. His grace Alonso de Montufar, Archbishop of Mexico, ordered the same to be buried on account of the great crimes committed on it, of deaths."

(His. de los Indios de la Nueva España, vol. I, p. 272.)

Don F. Ramirez appends to this paragraph: "It seems that the stone alluded to is the one called 'Aztec Calendar,' and is now placed in one of the towers of the cathedral."

From the above Mr. Chavero reasons as follows:—

The so-called Calendar Stone is the one now in one of the towers of the cathedral in Mexico. That stone was placed there by order of two canons, as we have seen, being the one found near the canal on the principal square of Mexico on the seventeenth day of December, 1790. According to Duran's description, it is the same stone seen there by himself and others on that spot, and the one caused to be built by King Axayacatl.

The whole fabric of the argument rests in the assertion of Father Duran that the stone he saw and the one wrought under King Axayacatl are one and the same.

Mr. Chavero brings forth new quotations in support of his theory, but all from the same author, Duran.

In order to verify the statements of Duran, I have carefully read and compared the statements on the same subject of Sahagun, Clavigero, Critobal del Castillo Torquemada, Ixtlixochitl, Tezozomoc, and the valuable Codex Ramirez. Though in nearly all these authors the building of the great Cuauhtlicalli, or great temple of Mexico, as well as the stones caused to be elaborated under Kings Moctezuma the First, and Axayacatl, are minutely described, yet I have failed in finding the one corresponding with the so-called Mexican Calendar Stone.

In my investigations I have given great weight to the opinions of Mr. Chavero himself, and to those of his associates, Ramirez and Orozco y Berra. From them I have learned that Duran took substantially all his history from the manuscript "Codice Ramirez." In fact, they say he copied literally in many instances. Chavero says: "I consider this Codex the purest fountain of the history of Mexico, and for that reason I have given it the name of 'Ramirez,' as an acknowledgment of grat-

itude to the one who preserved it." If the text of Acosta is compared with that of the Codex Ramirez it will be seen that the former copied the latter to the letter. Tezozomoc, though not, strictly speaking, a copyist, followed the same Codex.

These four chronicles, Ramirez, Duran, Acosta, and Tezozomoc, while in reality one and the same, are the only true fountains to write the history of the powerful empire founded by Tenoch and demolished by the last Moctezuma (Cronica Mex. by D. H. Alvarado Tezozomoc, precedida del Codice Ramirez, Mexico 1881).

We will now see what these authors say about the stone elaborated under King Axayacatl.

In the Codex Ramirez fragment No. 1, page 130, the following occurs: "As soon as they arrived in Mexico after the victory, Tlacaelel said to Moctezuma to order a stone to the image of the sun, and to name it Quauhtlicalli, which means eagle's vase; it was so ordered, so that, at the time of its dedication, the prisoners brought from Coahuaytlahuacan might be sacrificed. This stone is the one now at the door of the principal church in Mexico, and they say they intend to make a baptismal font out of it. In this stone the sun is represented in its upper part, and around it the battles that King Moctezuma won, viz: Tepeacac, Tochpan, Guaxteca, Cuextatlan, and Coahuaytlahuacan, all very nicely wrought with other stones, as they had no other instruments."

This stone does not correspond with ours, because though it had the sun's image in its upper part, it was in the shape of a vase, and had the battles above-named wrought around it. Another great stone was elaborated during the reign of Moctezuma Second.

Tezozomoc says on the same subject, in page 318, edition quoted above: "Few days after the victory of Cuextatlan and Tochpan, Moctezuma decided that, inasmuch as they had so many people from the provinces of Cuextatlan and Tochpan, they might increase and improve the house and temple of Huitzilopochtli, and right there the sacrifice of Huitzilopochtli might take place, by killing the Huastecan prisoners. These after having made the great Cu very high, they built steps to it, and in the middle they put the (talon) block, where the slaves made in war had to be killed, to commemorate King Chinulpopoca, who had begun it. Cihuacoatl answered, it was well, and the block must not be made of wood, but of stone, with a hole in the middle to put therein the hearts of those who should die on it, after having Huitzilopochtli tasted the blood of them; and that stone should not be built by the Huastecans, but by those of Atzacaputzalco and Cuyucan, excellent masons, working in the stone the wars of their countries when by you they were subjected to the Mexican Empire. After the stone, or millstone, was finished, they raised it up and placed it in the middle of the large room opposite the principal entrance and of Huitzilopochtli, which was made of stone, and was looking to said stone or wheel, and is the one now in the corner of a house of a son of one of the conquerors, and the sacrificial stone is to-day near the principal church in the city of Mexico." On p. 338 we read: "The vase or bowl placed in the great Cu, he called all the vassals, so that they might see the sun's vase, called God Xiuchpilli Quauhhtlehuatl, which we shall try for the first time with the vanquished of Huaxaca." On p. 339: "When the ceremony was ended (the sacrifice of the slaves) he ascended on top of the big house which is the Huitzilopochtli Tlenamalactli, and carried fire in a brasier, and from there a green snake, called Xinhecatli, came down, carried in the

arms, and was put in the trough of the hollow stone, called Cuauhtlicalli, and there they placed the snake until it was burned and made ashes."

The next time the stones are mentioned is during the King Axayaca. This text is very interesting, as it is the starting point of Prof. Valentine's interpretation of the Aztec Calendar Stone:—

"King Axayaca said to Cihuacoatl a certain day: Father and master, I would like very much to repair the round stone which is now used as a brasier and slaughter-trough on top of the house of tetzahuitli Huitzilopochtli, or, if you prefer, to have another made of better workmanship and the one now there may be used in another temple. Cihuacoatl said it was well thought, and immediately caused the neighboring people to be called, viz, those of Atzacaputzalco, Tacuba, Cuyucan, Culhuacan, Cuiclahuac, Chalco, Mizquic, Tezcuco y Huatitlan. About 50,000 Indians gathered together with big ropes and rollers, and went to take a big boulder at the foot of the great mountain of Cuyucan. Once brought, they began to work it with flints, strong and sharp, putting the history of the gods, specially Huitzilopochtli; and before they had brought another stone from Ayotzinco, and as they brought it, it fell down on the bridge Xoloco, and never was found again; it may be Huitzilopochtli swallowed it, and thus they brought a bigger one from Cuyucan. When finished and perfected, Axayaca said to Tlacaelel: 'My father I would like that the stone now on top of the Cu, having been made by my king and master Moctezuma, be not taken to any other place, but well set, may be placed below the great Cu opposite the house of Huitzilopochtli; and after, said Cihuacoatl: 'It is also necessary my masters and we, to bring one to build a trough of fine stone that will be used as Cuauhtlicalli in the same style, for the blood of the butchered in sacrifice, as it is our present to the honor of our master Huitzilopochtli.' P. 409. 'They knelt down before the brasier called Cuauhtlicalli.'

P. 411. "They came to celebrate the new brasier made Cuauhtlicalli of the temple of Huitzilopochtli."

P. 412. "The feast of the butchering of people must be celebrated with great solemnity so that they may see the new temalcacatl."

P. 415. "They took them (the prisoners) to the top where Huitzilopochtli was opposite the great temalcacatl and the trough called Cuauhtlicalli."

P. 416. "They took the heart to the hole of the brasier."

P. 417. "After the guests were gone, Cihuacoatl said: My son you have shown your honor and promise of the temalcacatl stone and Cuauhtlicalli, stone brasier."

"After finishing the square the walls and pictures of the gods, they hurried the work of the Cuauhtlicalli vase, or stone brasier, and in it there was the picture of the sun. Afterward they called the Mexicans, and neighbors, and they raised the great stone or brasier to the top, though the temple was 160 estados high."

P. 516. Speaking of the sacrifice. "They took the hearts of the prisoners and put them into the hole of the stone, called Cuauhtlicalli, which had a hole a yard around. This stone is now opposite the principal church in Mexico."

From what we have read we see that the stones mentioned are:—

1. *Techatl*, which was a block (talon); it was the common sacrificial stone.

2. *Temalcacatl*. This was the stone used in the gladiator's sacrifice. It is like a millstone in shape, and had a hole in the middle where the prisoner was tight.

3. *Cuauhtlicalli*, from *cuauhtli*, eagle and

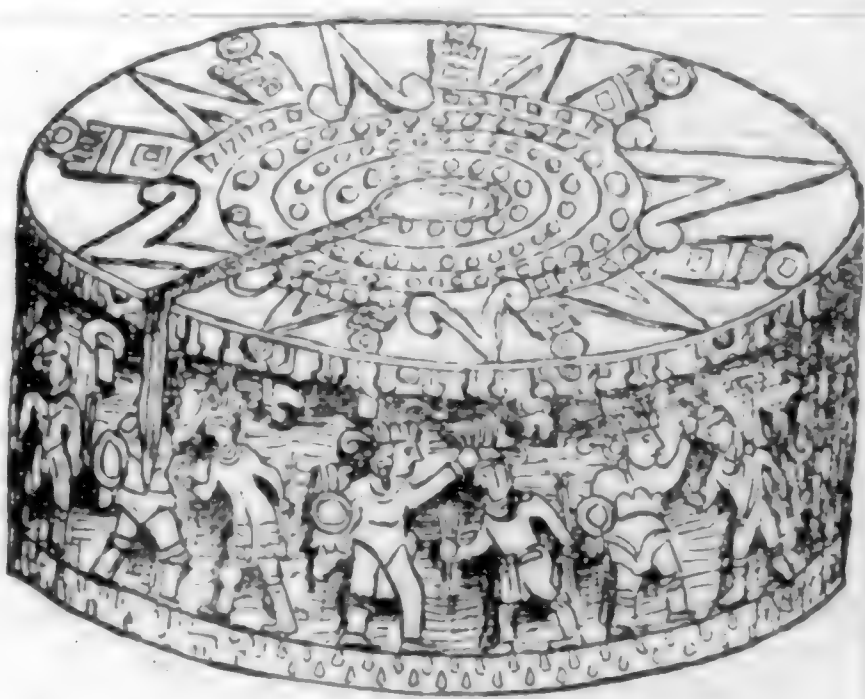
xicalli vase, cup. This is the one described so many times; had the sun's image on the top. It had a hollow vase or cup in the middle to receive the blood of the prisoner.

There was another kind of stone like this called:—

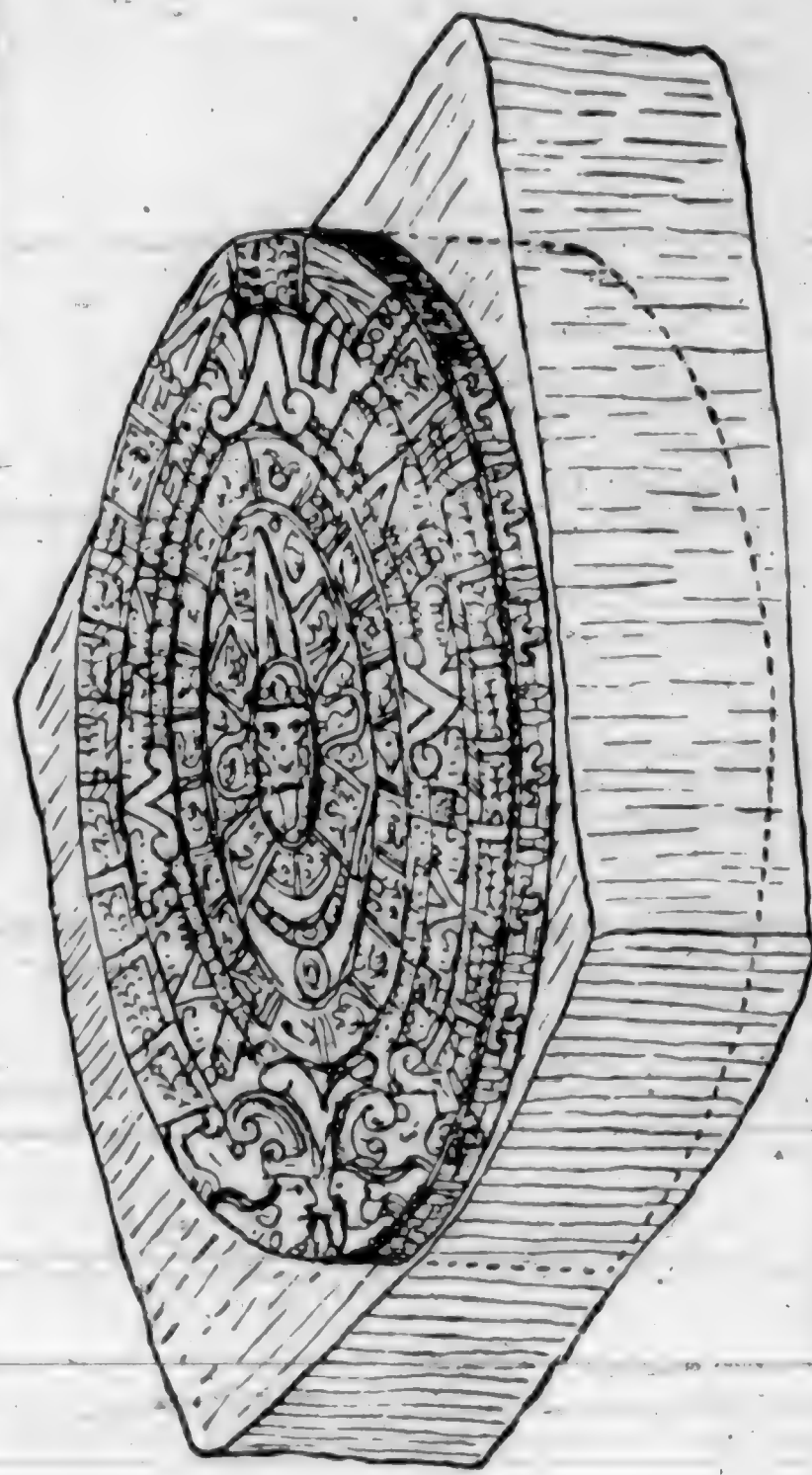
Teocauhxicalli, from Teo, god, and cuauhxicalli. This, according to many authorities, was painted. There is one such stone buried yet in the plaza of the city of Mexico, a description of which was published by Brantz Mayer. Our stone does not correspond to any of the above, nor to any built during the reign of Axayaca, as supposed by Mr. Chavero. He says that our stone is a true cuauhxicalli, but it cannot be, as we have seen that cuauhxicalli are cylindrical in shape, and have a hollow in the middle to receive the blood, and our stone has none. The etymology of the word says so: *Cuauhli*, eagle; *xicalli*, vase, cup.

The only text supporting Chavero's theory is Duran, but Chavero himself says that Duran copied from the anonymous author of the "Codex Ramirez," and we have seen that this author, as well as Tezozomoc, does not support Duran's statement. On the other hand, Duran's mistake is easily accounted for. He had read on the anonymous manuscript the description of the Cuauhxicalli, where the sun's picture was represented, and having seen in the stone called the Calendar also the sun represented, naturally enough thought it to be the same. But many other stones have been found with the sun represented in them, and as they correspond in other respects to the ones described to have been built during Axayacatl, we may safely suppose that the one here painted is not Axayacatl's Cuauhxicalli, as supposed by Mr. Chavero. This antiquarian has written a very long and elaborated description, showing a degree of erudition hardly equaled by any other exponent of this remarkable monument, but all are theories, supported by few facts.

Prof. Philippe J. J. Valentini, Ph. D., following the ideas of Chavero, has also made a description of this stone. He misquotes Tezozomoc, and from the doctored text of that writer he builds his theory, which is no other than Chavero's. Some of the mistakes he makes in his drawing of the stone we have already shown. I will not detain you with his description, as he does not bring any important facts.



My idea about the so-called Calendar Stone is that it is an unfinished stone, similar to the one called the Sacrificial Stone. If you cast your eyes to the two perspective drawings here before you, you will see at a glance the similarity, the only difference being the size and ornamentation. Another reason in support of my theory is that, were not this the case, they most surely would not have carried four times as much stone as they needed, especially when we read of the great trouble in carrying them, which we may easily believe, from the mechanical means at their dis-



posal. Then they intended to use all the stone they carried, and as they used only about nine inches, and it is nearly thirty-six inches thick, in my opinion the stone, as intended, was as marked in dotted lines in the perspective drawing.

It may be said that in the sacrificial stone there is an excavation; but about that I will remark that, in the opinion of many, that hollow was made by Vandals, and not Indians; and, supposing it was made by the Indians, we can see it was not made until the stone was finished, and most probably not by the artist, as we see the lines crooked and cut in the figures in a very unsymmetrical way. Then, as our stone was not finished yet, of course they had not made the hollow and gutter. In the histories we find passages in support of my theory, though I don't wish to be understood that I intend to determine the time in which it was built. I will quote them to show that such a stone like the one we speak was built, or, rather, intended to be built, at the time of the last Moctecuzoma and was never finished.

The already-named anonymous author of the "Codex Ramirez" says, p. 77:—

"They say that Moctecuzoma being astonished with the many signs and wonders against his kingdom, decided to bring a very great stone to make sacrifice on it, to pacify the gods. Many people went to get it but it was impossible to move it, breaking all the ropes, etc." Here follows how the stone talked. And when they arrived to the channel at the entrance of this city, it fell down and was lost.

Tezozomoc says on the same subject, p. 662: "Moctecuzoma remembered that in his time he had not made any work to perpetuate his memory. He called Cihuacoatl that he might order to be made for the temple Huitzilopochtli a stone larger two (codos) and higher than that already there. Cihuacoatl called all the masons and stone cutters of the wards of Teopan, Movotlan, Atzacvateco and Cuicopopan. He told them that the King ordered them to make a stone like the one on top of the Cu of Huitzilopochtli with the only difference that it should

be made larger and taller, and all of you together must go to get it."

P. 665. "When they arrived to the great bridge of Xoloco and in the middle of the bridge, the stone said, 'here and no further,' and after that the bridge broke and many were killed."

Clavigero says, p. 231, London edition, 1787: "In 1509 the war against Xochitepec happened, that State having rebelled. In the year following, Moctecuzoma, thinking the altar for the sacrifices too small, and unproportioned to the magnificence of the temple, caused a proper stone of excessive size to be polished and cut, and commanded it to be brought in due form to Mexico. A vast number of people went to drag it along, but in passing a wooden bridge at the entrance of the city it fell, drawing four men, amongst them the priest. The king and the people were a good deal disconcerted, but without giving up the undertaking, they drew the stone with prodigious labor and fatigue out of the water, and brought it to the temple, where it was consecrated with the sacrifice of all the prisoners that had been reserved for this great festival, which was one of the most solemn ever celebrated by the Mexicans."

Another argument has been brought to show that the stone was built under King Axayacatl's reign, and that is the hieroglyphic thirteen acatl on top of the stone corresponding to the year 1479, which, according to some authors, Axayacatl lived; but there are as many authors who state that King Axayacatl was dead and King Tizoc, who ordered the Cu or great temple to be enlarged and a larger stone to be wrought, died before his projects were accomplished. Then this stone might be one of the unfinished stones of King Tizoc.

But we have another date written on the sun-face, viz: 2. Acatl, and this date corresponds to the year 1507, which would correspond near enough considering the confused Mexican chronology, to the year in which Moctecuzoma the Second ordered the great stone to be wrought. The other date, 13 acatl, would then be the thirteenth day of their first month, Atlacahualco, corresponding to our 10th of March, in which they celebrated the sacrifice of the fattened prisoners.

We see from this that two unfinished stones exist, according to the Mexican chronicles; that under Moctecuzoma the Second the largest ever wrought was ordered to be in shape the same as the one on top of the Cu. Ours is the same in shape, excepting that it is not finished, and it is larger, and corresponds therefore to the one ordered by King Moctecuzoma the Second.

I have endeavored to give, in a short space of time, a clear idea of the principal theories and interpretations of this monument. I have no doubt that many things have not been presented with the fullness that could have been, and for that I offer as an apology the difficulty of the subject and the limitations of a lecture.

San Francisco, November 19, 1883.

SOME materialistic scientists are very fond of quoting the remark of Kant: "Give me matter, and I will explain the formation of a world;" but they omit his other words, "Give me matter only, and I cannot explain the formation of a caterpillar."

WALL supports for clothing: When you drive a nail into a wall, clothes-press, or closet, to hang things on, drive it through a spool up to the head. Select a spool with a hole large enough so that the nail will not split it.

Cracks in Buildings.

THE numerous cracks that disfigure that part of plasterers' work which is lathed arise partially, as has been hinted, from the settlement, shrinkage, or contortion of the floor, partition, battening, or cradling, to which the laths are nailed; but sometimes split or damaged laths are used, and at others weak and crooked ones of unequal thickness, that ought to be rejected, are worked in with the rest, and these split and break when nailed overhead where the lathing carries the whole weight of the plaster. In many cases also the laths are much split in the process of lathing, and are often nailed too close together to allow the stuff to insinuate itself and curl behind the laths to form a good clench or key, which is one safeguard against cracked ceilings.

Among several causes which contribute towards the impaired appearance of the tops of so many rooms may be mentioned joisting laid at too wide intervals, whereby the laths sag under their burden, and also the folly of fixing and lathing ceiling joists in double or framed floors before the other timbers have settled down and taken their bearings. Then, perhaps, when these dangers have been averted, a quartered partition, that has been wrongly allowed to rest upon the floor, begins to make its weight felt; or, it is found that, after the pricking up coat has been laid, the brandering or counterlathing has been forgotten. In common ceilings sometimes the filling in pieces under the trimmer-arch are too far apart, and often enough the floor is not sufficiently rigid or stiff, even when strutted and tightened with a tension rod, on account of the shrinkage of the joists, to preserve the ceiling formed on its under side from drooping out of the horizontal and cracking, nor from deflecting still more, and shaking and sounding almost like a drum when trampled upon; but of course, notwithstanding what has been said, there are instances of good and substantial floors settling a little without injury to equally good ceilings beneath them. Sometimes cracks owe their commencement to the absence of any key immediately under the joists, where the plaster could not be squeezed through to obtain a hold in consequence of the laths being nailed with too much overlap, it being preferable, nevertheless, to avoid overlapping altogether. There are, however, other conditions depending upon the quality of the plaster itself that have to be satisfied before a ceiling is to be exempt from cracking. The coarse stuff may be partly composed of mold that will cause it to shrink and crack, and the hair may be either deficient in quantity, too short, imperfectly beaten, and worked into the stuff, or it may be dirty or rotten. Even if the sand and hair be both of proper quality, the leak may not have been allowed sufficient time to slime thoroughly before the plaster was required, for workmen cannot be kept waiting, and the consequence is blistering, cracking, and the partial disintegration of the work by the lime blowing. Supposing, however, that the mixture is all that could be desired, that it is evenly spread,

hangs together well, is properly scratched or keyed for the floated coat, which also is laid on satisfactorily, there remains the common danger of cracking the ceiling permanently by prematurely applying the setting coat, for unless the other coats are quite dry there will be unequal shrinkage, which must entail cracking. Where cement is used for internal work it is necessary to add a sufficiency of sand to prevent cracking; and to prevent the layers from splitting away from each other it is best to apply it in one coat of equal thickness, taking care to well hand-float the setting coat of neat cement over it before it is too dry, else the face will crack and peel off. Plaster of Paris when mixed with common plaster to make it set more rapidly requires much dexterity in its manipulation to prevent cracks appearing. It would be needless to point to the numerous cracks that are always to be observed somewhere or other about buildings that are externally wrapped up in cement or stucco, particularly near the cornice, parapet and blocking course, or where due care has not been observed in preventing the formation of fissures, in which water has lodged and produced havoc by freezing; and without occupying time by further allusion to the means by which cracking may be avoided in other branches of plasterers' work, it will be an appropriate conclusion to point to the necessity of employing screws with no parsimonious hand in securing enrichments, center-pieces, decorated cornices, and the like heavy kinds of ornamentation, which are sometimes placed profusely overhead, so that there may be as little chance as possible of the cracking proving dangerous as well as unsightly. It is true that the plasterer is hedged in with many troubles to insure a good ceiling, for after having escaped all the dangers briefly adverted to, the joiner by fixing a cupboard front on the chamber floor may crack the coving of the drawing-room cornice, or the gas-fitter in lifting a board to put in a syphon to the gas-alier may similarly mar the beauty of the center flower, but this should only open his eyes to the necessity of erring on the side of coherence and strength. It is fortunate, indeed, that so few people are annually injured by falling ceilings, considering how many are cracked and to all appearance ready to fall, as well as the weight of plaster and the momentum it acquires in its descent. In many ill-built houses where the laths are crooked, the plaster, in order to get the ceiling tolerably level, is in some places more than an inch thick, and supposing that a small lump, about three feet super in extent, and which would weigh about twenty-five pounds, were to become detached, it would fall upon a person's head sitting underneath at a vertical distance of only five feet from the hole left in the ceiling with a force which would amount to no less than about 450 pounds.

Before a structure is fit for occupation there are yet other cracks contributed by the bell-hanger, gasfitter, paperhanger, painter, glazier, etc., that would make their appearance. As the nature of many of these will probably

occur to the reader, and a detailed account perhaps weary by monotony, it will be sufficient to add that it is as mortifying to the grainer to see his *chef d'œuvre* disfigured by the door panel splitting as it is to the painter to notice the blisters arising from the body of paint he left on the eaves' cornels of unseasoned timber, to become cracked and knocked off in fixing the spouting. The paperhanger observes also that the cracks in the plastering carry his own work with them, and thus it appears that the ramification of responsibility among the trades already noticeable, as between the bricklayer and carpenter, carpenter and plasterer, etc., becomes at last intricate enough to render it exceedingly difficult to lay the fault of any crack at the right door, or, in other words, to establish with anything like certainty the cause of cracks in buildings.—*Building Times*.

ARE APPRENTICES FREE WHEN THEY ARE ONE-AND-TWENTY?—One of the articles of faith shared alike by generations of masters and apprentices has been that the latter, notwithstanding the length of the term they are bound by their parents or guardians, are legally free the moment they attain their majority. While there are doubtless masters who will be gleeful, there must be a still larger number of apprentices to whom the recent decision in the case of Richardson, Koolman, and Lager, vs. Harrison, will be a dreadful blow. As soon as he attained his majority, Master or Mr. Harrison, an apprentice to this well-known firm of electrotypers, chose to absent himself for a time, and on being called to account by his masters, pleaded that being of age, it in itself canceled his indentures. In happy language he further declared that "this trade does not satisfy the appetite of my desire." His masters sued the father for the sum of £120, being the estimated loss of the services of the son until the expiration of the indentures, and what is more, they got it. An application made on behalf of the defendant for a new trial was refused—with costs—by the assistant judge. The decision will affect tens of thousands of apprentices not only in this but in every other handicraft.—*London Printing Trades Journal*.

CHINESE COMPOSITION.—The Chinese compositor has a merry time while working. One would imagine he was on a six-day go-as-you-please walking match instead of setting type. He cannot sit at the case as our printers do, but must constantly travel from one case to another, as the characters needed are so numerous and they cover so much space that it is impossible to keep them in anything like the room required for the ordinary case. In setting up a piece of copy, the Chinese printer will waltz up and down the room for a few moments, and then go down stairs for a line of lower case. Then he takes the elevator and goes up into the third story after some caps, and then out on the wood-shed after some astonishing. Intelligence in his case is not so much a requisite as being a good pedestrian.