

Published on the 15th of each month by the
SAN FRANCISCO ARCHITECTURAL PUBLISHING CO.

Its issuance as a monthly in 1880 was received with gratifying favor, yet but few entertained the thought that it would become a permanent publication. Our best friends doubted its permanency, while expressing kind words of encouragement with wishes that prosperity greater than our highest ambitions might be realized. Prophets and the sons of prophets predicted its early demise, and knowing ones fixed the limits of its existence within the bounds of six months; within which time we were to be laid in our editorial casket, and over our ashes were to be placed the tablet of failure. But we can afford to forgive, while we smile at those who wished us well but feared we would not succeed; and to those who would have rejoiced had we gone down under the numerous adverse and disadvantageous conditions and circumstances of almost continued personal or family affliction, and the death of two loved ones within the last past eighteen months, together with the difficulties and arduous labors required in

grist-
er mechanical operations. The
class workmen in San Francisco
to meet the emergencies of mo
so that, when brisk times set in

overcoming the many obstacles encountered in working up and utilizing facilities necessary to better success; we simply ask that they lay aside all unkindnesses in the future, and like true and good men lend a helping hand in making sure the foundations of this the first journal ever published within the Pacific States in the interest of architectural, mechanical, sanitary, and house-building sciences.

If all the facts of its history were related and made the basis upon which to repeat a similar enterprise, it is doubtful whether within the entire territory of the United States a man or set of men could be found who would be willing to undertake the venture. At its inception as a quarterly, Kearneyism was rampant, business of every class and character depressed and demoralized, thousands of workmen unemployed, poverty and distress almost universal, and the then outlook one of a discouraging character. And even after the gods of evil had withdrawn their inspirations, and the sand-lot conclaves began to wither and sink into merited oblivion, it required the genial sun of nearly two years' bettered state of things to reinstate and restore the era of prosperity with which California is now and has been blessed since the crushing out and destruction of the never-to-be-forgotten evil days of 1879. In addition to all this, no journal of its character had ever been attempted upon this coast, and the undertaking was looked upon as chimerical. The avenues of information were unopened, and the fields of knowledge in matters necessary to make the enterprise a success remained unexplored. Architects, owners, and mechanics had learned to live without a home journal devoted to their interests, depending upon such as might be sent from abroad—overlooking the fact that this coast in nearly all of its building requirements differs widely from those of other States and cities, with scarcely a corresponding feature in either styles, plans, materials, or methods of construction.

It is generously and generally conceded that this journal has, during its publication as a monthly, exercised a material influence for good in architectural and mechanical circles; and it is and will continue to be the purpose and aim of its managers to increase and enlarge its influence; and whatever can be will be done in that direction.

Our greater cause of complaint and regret is, that while it is commended and recommended by architects generally, enjoys the enviable position of being the recognized official organ of the profession upon this coast, receives the liberal patronage of so large a number of mechanics in this city and all parts of the United States, and there being so large a number of those well qualified to write up instructive articles for publication, yet but few employ their leisure and talents in that direction. While we cheerfully feed our patrons with the best we can prepare for them, at the same time it affords pleasure to be able to introduce a new dish of intellectual viands and furnish our readers with a change of diet.

We hope that in the future there will be an improvement in this connection, and that our architectural brethren, mechanics—among whom there are hundreds well qualified to present new or discuss old theories and subjects—and our friends generally, will devote some of their leisure in writing up articles. There are many practical-minded parties who, feeling that they lack the educational qualifications, neglect to exercise their talent through fear of failure to clearly express their views. To such we say: Do the best you can; and so far as necessary we will repair and strengthen, whenever a word or line needs correction or improvement. We propose this for the purpose of encouraging the efforts of those who lack confidence, yet in mind and thought are rich in valuable suggestions; practical men who have gathered largely from the prolific fields of experience, from

whence to the world has from time to time come many of its truest and most valuable lessons. Full of hope and bright in prospects for the future, we close the volume for 1882; asking that its defects, omissions, and errors may be forgotten, and that the volume for 1883 may excel in every department those of former years. We wish one and all of our kind readers prosperity, health, and every blessing, and hope that at the end of the coming year but few of their number shall have been called to pass to scenes beyond mortal life, and that those who are spared yet another year may at its end be the better from its enjoyment, and the better prepared to meet the inevitable, whenever the time shall come to each to lay aside the cares and toils of life to enter beyond the veil which to mortal mind enshrouds the future in solemn mystery.

San Francisco Chapter American Institute of Architects.

The regular monthly meeting of the Chapter was held in the rooms of the Art Association on Friday evening, December 1st. A goodly number were present. In the matter of attendance, this Chapter, we think, will compare favorably with any belonging to the Institute.

The members were called to order by the President, J. Wright, Esq. Reading of the minutes and preliminary work were proceeded with as usual.

Committee on "Articled Students" were granted further time. Mr. W. Harris was elected a member as draughtsman. The report of Mr. Eisen, while acting as secretary was received, and ordered spread in full upon the minutes.

Under the head—"For the good of the Chapter"—a member referred to the fact that carpenters and contractors were in the habit of retaining the originals, or making tracings of the drawings entrusted to them for execution, and whenever found convenient, of palming off such tracings either as their own, or as just suitable for an owner's use, with the remark that by using such tracings, the value of an architect's services could be dispensed with. Houses of the value of more than \$10,000 have been built by plans furnished the owner by contractors, at no cost whatever for the plans to the owner.

It is a custom with some mill proprietors to copy parts of details entrusted to them for execution, and to profit by their use in other connections than those for which the details were made—thus virtually defrauding the originator of benefits which should accrue alone to him. The compliment to the architect producing something so neat and beautiful as to be selected and placed on exhibition in planing mills for the selection and use of others, without cost for the design, is a species of compensation not calculated to meet office rent and expenses, nor supply daily requirements.

"Nipping" things of even far less cost and value in other connection is punishable under the laws regulating community life; but unfortunately there is no law that shields and protects the labor and production of architects from being "nipped" by any one who may have access to them.

The introduction of this subject caused a lively interest to be taken by all the members present, and various remedies were proposed.

One member gave as his views that the proper way to stop the evil was to require full fees from all contractors for plans, specifications, and details when ordered by them. Also all contractors to be required to return all drawings and specifications to the architect.

Another member contended that it was impossible to prevent contractors copying plans, details, etc. He made it an invariable rule

that before giving the certificate of the last payment, every drawing, memorandum, etc., should be returned to the architect. The only way possible to shut off the pilfering of designs was by educating the people to perceive the difference between the work of the professional architect and of his imitator. One of the grand principles for which this Chapter was founded is the education of the members to a higher and nobler standard in the practice of architecture. From the nature of his profession the architect should be a thorough mechanic; a popular error being that the architect is merely an educated carpenter. Our mission as a chapter is to show the difference between the architects—educated mechanic though he be—and a contractor's plans. It will be difficult for the Chapter to remedy the evil of contractors' copying plans, so long as the latter conceives it not to be dishonorable to filch the labor and skill of architects, without right and proper compensation.

The president made a few well-timed remarks, arguing that everything possible should be done by the Chapter to correct all irregularities of practice on the part of all parties concerned in general building operations, and to discourage the practice of plan and detail copying by either builders or mill-men. Correct and practical plans and details are not the work of a moment, but require study, care, time, and labor in their production; and it cannot be claimed as just or honest on the part of those who wrongfully appropriate such productions to their own uses and purposes without fair and just remuneration. The necessities of the case are a higher moral sentiment, favoring the rights of each and all and discouraging irregularities in every form. Architects are entitled to the enjoyment of all the profits and advantages arising from the exercise of their professional skill and labor; and it is but an act of common fairness and justice that contractors, mill-men, and owners should concede this equitable proposition and govern themselves accordingly.

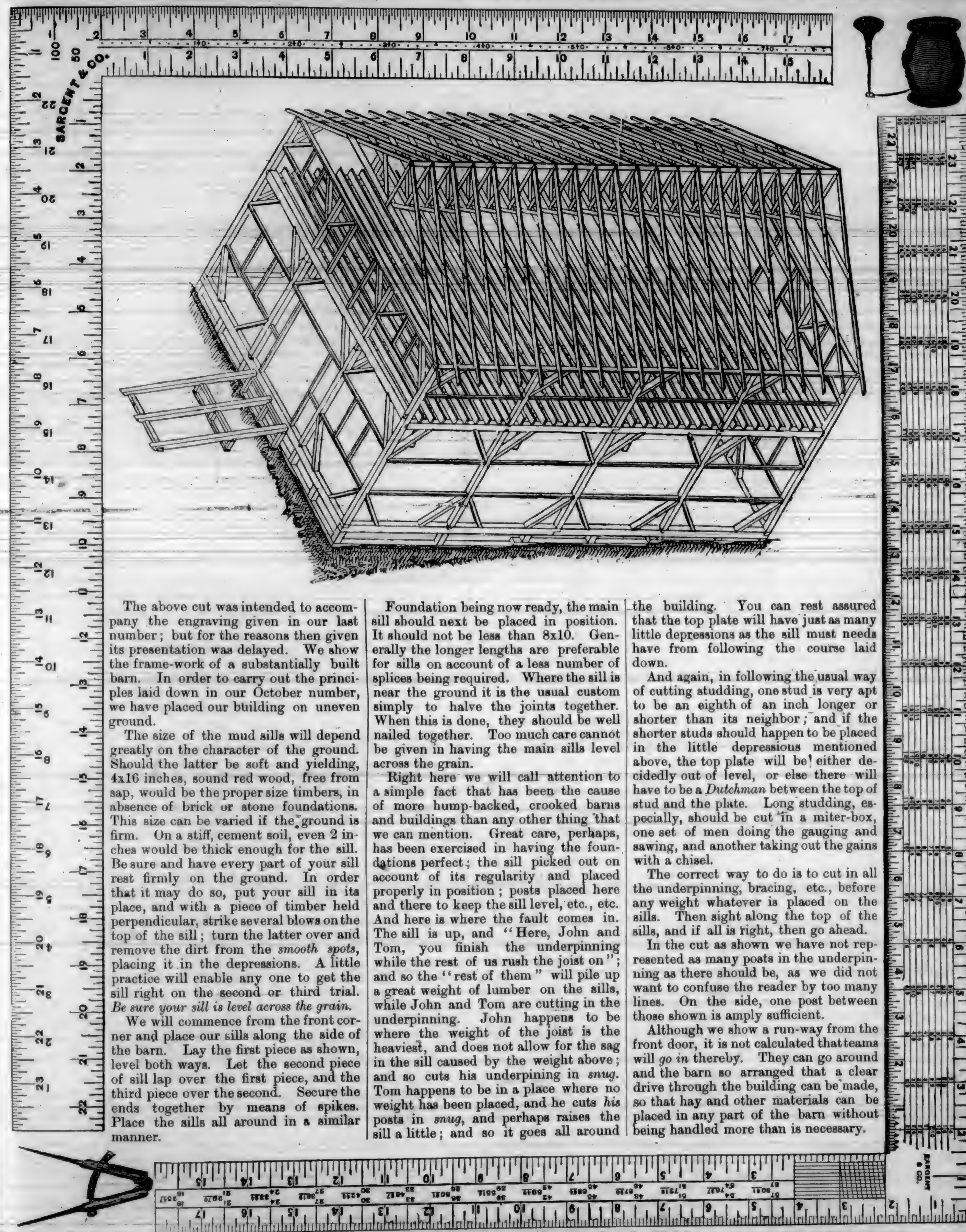
In harmony with the views expressed, a committee of three were appointed to take into consideration the subject-matter, and report at the next regular meeting.

The subject of a national style of American Architecture was introduced by Mr. Macy. It was argued that America, as the offspring of England, continued to a large extent to ape the architecture of the barbaric ages. Not a sacred edifice was erected where the worshippers did not assemble under pagan lines of architecture. Even upon our business streets sea-side cottages are being erected. The aesthetic craze is upon us, and until its reign is over, Americans cannot lay claim to founding a style peculiarly their own.

The secretary was instructed to notify the members of the Chapter residing outside of this city of the proceedings of this Chapter, and to request them at their earliest convenience to forward papers to be read at the regular meetings.

The Good Work Goes On.

We gladly welcome to our subscription list the large ingathering of new subscribers, and the renewal of old subscriptions. The conclusion is rapidly gaining ground that the best interest of all parties engaged in the erection of buildings, whether as architects, builders, workmen, or owners, are best and substantially subserved by perusing the monthly issue, of this journal. Let the good work go on, and soon we will produce an architectural publication unexcelled by any of its kind published within the United States. In both heart and hand, we are prepared for the better and greater work, and are eager for the day to arrive when we shall feel justified in laying aside a profitable professional business to enter upon exclusively editorial career.



The above cut was intended to accompany the engraving given in our last number; but for the reasons then given its presentation was delayed. We show the frame-work of a substantially built barn. In order to carry out the principles laid down in our October number, we have placed our building on uneven ground.

The size of the mud sills will depend greatly on the character of the ground. Should the latter be soft and yielding, 4x16 inches, sound red wood, free from sap, would be the proper size timbers, in absence of brick or stone foundations. This size can be varied if the ground is firm. On a stiff, cement soil, even 2 inches would be thick enough for the sill. Be sure and have every part of your sill rest firmly on the ground. In order that it may do so, put your sill in its place, and with a piece of timber held perpendicular, strike several blows on the top of the sill; turn the latter over and remove the dirt from the smooth spots, placing it in the depressions. A little practice will enable any one to get the sill right on the second or third trial. Be sure your sill is level across the grain.

We will commence from the front corner and place our sills along the side of the barn. Lay the first piece as shown, level both ways. Let the second piece of sill lap over the first piece, and the third piece over the second. Secure the ends together by means of spikes. Place the sills all around in a similar manner.

Foundation being now ready, the main sill should next be placed in position. It should not be less than 8x10. Generally the longer lengths are preferable for sills on account of a less number of splices being required. Where the sill is near the ground it is the usual custom simply to halve the joints together. When this is done, they should be well nailed together. Too much care cannot be given in having the main sills level across the grain.

Right here we will call attention to a simple fact that has been the cause of more hump-backed, crooked barns and buildings than any other thing that we can mention. Great care, perhaps, has been exercised in having the foundations perfect; the sill picked out on account of its regularity and placed properly in position; posts placed here and there to keep the sill level, etc., etc. And here is where the fault comes in. The sill is up, and "Here, John and Tom, you finish the underpinning while the rest of us rush the joist on"; and so the "rest of them" will pile up a great weight of lumber on the sills, while John and Tom are cutting in the underpinning. John happens to be where the weight of the joist is the heaviest, and does not allow for the sag in the sill caused by the weight above; and so cuts his underpinning in *snug*. Tom happens to be in a place where no weight has been placed, and he cuts his posts in *snug*, and perhaps raises the sill a little; and so it goes all around

the building. You can rest assured that the top plate will have just as many little depressions as the sill must needs have from following the course laid down.

And again, in following the usual way of cutting studding, one stud is very apt to be an eighth of an inch longer or shorter than its neighbor; and if the shorter studs should happen to be placed in the little depressions mentioned above, the top plate will be either decidedly out of level, or else there will have to be a *Dutchman* between the top of stud and the plate. Long studding, especially, should be cut in a miter-box, one set of men doing the gauging and sawing, and another taking out the gains with a chisel.

The correct way to do is to cut in all the underpinning, bracing, etc., before any weight whatever is placed on the sills. Then sight along the top of the sills, and if all is right, then go ahead.

In the cut as shown we have not represented as many posts in the underpinning as there should be, as we did not want to confuse the reader by too many lines. On the side, one post between those shown is amply sufficient.

Although we show a run-way from the front door, it is not calculated that teams will go in thereby. They can go around and the barn so arranged that a clear drive through the building can be made, so that hay and other materials can be placed in any part of the barn without being handled more than is necessary.

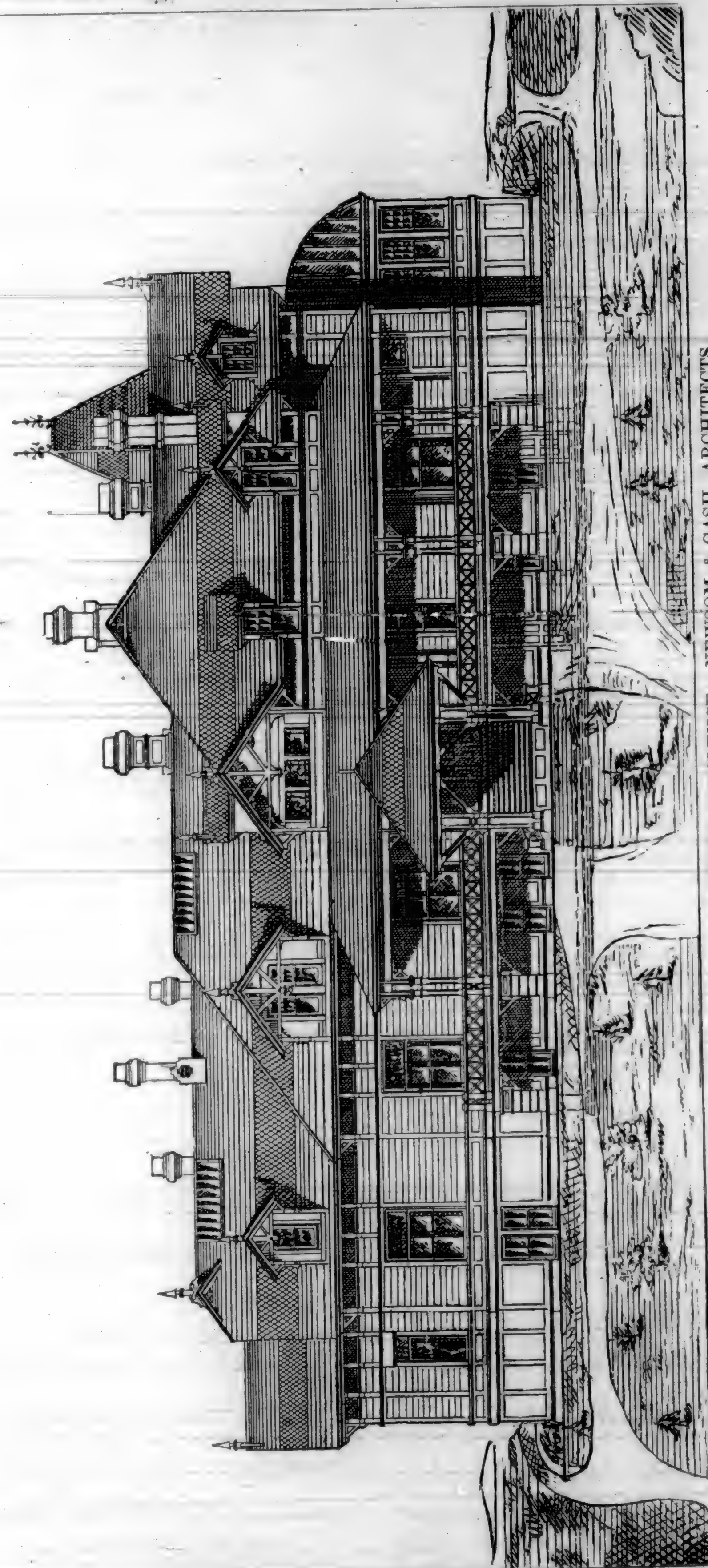


PLATE 1.—REAR VIEW OF A COUNTRY RESIDENCE. NEWSOM & GASH, ARCHITECTS.

ERRATA.

Under the cut on page 171 the words "Rear View" should be "Front View."

Our Illustrations.

Plates 1, 2 and 3 are the front and rear views with plan, of a commodious suburban residence. It can be built for \$20,000. This figure may be changed either way according to the style of finishes used. Newsom & Gash are the architects.

Plates 3, 4 and 5 are the plans and elevation of a very convenient country home. It can be built for about \$3,500. The arrangement of the rooms is all that can be desired in such a house.

Next year we will show our readers a decided improvement in regard to our cuts. We have made arrangements by which the drawings sent to us for reproduction will be given in a style not inferior to any journal published. We will also give a full description of each illustration, and the figures for which the buildings can be erected in California at the time of each issue. The latter fact is important to bear in mind, as the country home published in this issue would have had a smaller amount placed in its value had it been given in our issue of the same date last year.

Royal Institute of British Architects.

Through the kindness of its secretary we have been furnished full reports of the proceedings of the ROYAL INSTITUTE OF BRITISH ARCHITECTS, which we shall notice at length in the January number of this journal. A cursory review of its pages reveals a large amount of valuable matter, and demonstrates the fact that the architects of the mother country are alive to their truest interests as men, and to the interests of the profession to which their time, energies, and talents are devoted.

In this connection we again call upon our friends—architects, mechanics, and owners alike—to rally to the support of this journal, as by its greater financial success its management will be able to reach beyond all present attainments, and make it what this coast really needs, a supremely representative journal. Its circulation has heretofore reached to nearly every State in the Union, and to many cities and places beyond the limits of American territory; and its rapid augmentation of subscription patronage during the current year points to the time as near at hand when its circulation will be unsurpassed by any journal of its character, and we hope that none whose interests are represented in its columns will permit any opportunity to pass, to aid us in the consummation of the grand results in contemplation. We have demonstrated the sincerity of promises heretofore made by the improvements incorporated during the past twelve months; yet what has been done in comparison with that intended is but as the dews of night as compared with copious showers.

A Neat Answer.

"What is the use," contemptuously said a poor woman to a lady candidate of an important school board, "of teaching our girls drawing when they are only going to be servant-maids?" "Well," replied the lady candidate, "the great objection to servant-maids of the present day is, that through rough handling they break valuable glass and china put into their hands. They lack the delicate touch necessary for the right handling of them, and there is nothing so calculated to cultivate this delicate handling as the art of drawing, and hence it qualifies them for whatever may be their position in life."

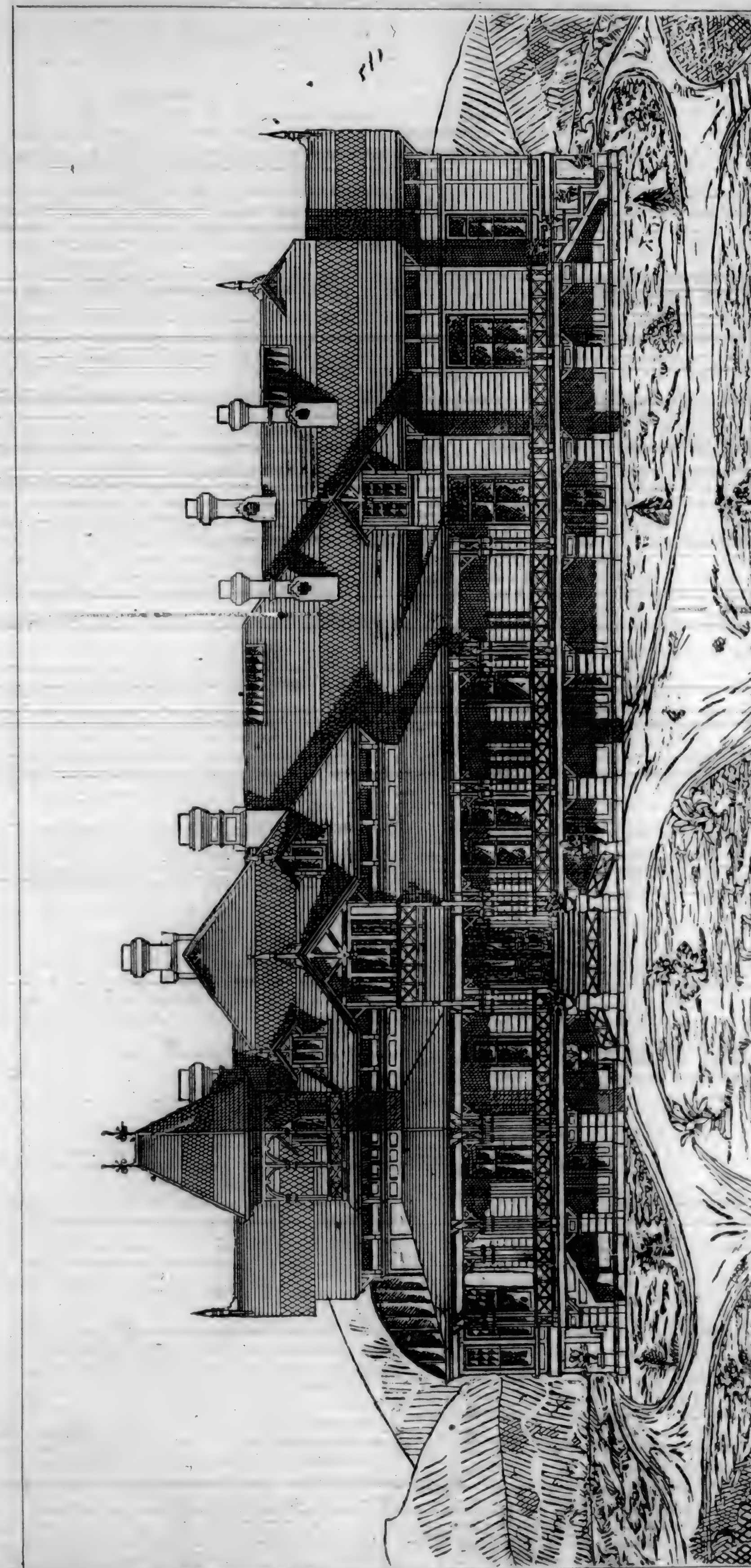


PLATE 2.—REAR VIEW OF A COUNTRY RESIDENCE. NEWSOM & GASH, ARCHITECTS.

EXTRA INDUCEMENTS

TO THE

SUBSCRIBERS FOR 1883,

TO THE

We will send either of the following journals for one year in connection with the CALIFORNIA ARCHITECT for the amount opposite their names:

	Price of paper alone, foreign year.	Price of paper and CAL. ARCH. and B. N.
American Architect (weekly Ed.)	\$6.00	\$7.00
" " (monthly Ed.)	2.00	3.50
Carpentry and Building	1.00	2.50
Builder and Wood Worker	1.00	2.50
American Artisan	1.00	2.50
Brick, Tile and Metal Review	.50	2.25
Carpenters' Journal	.50	2.25
Building	1.00	2.50
North-Western Lumberman	4.00	5.00
Scientific American	3.20	4.50
" Supplement	5.00	6.00
Scientific American and Sup.	7.00	8.00
Leffel's Mechanical News	1.00	2.50

Select any one of the following list of books, forward us the amount, and we will send you the book, together with the CALIFORNIA ARCHITECT AND BUILDING NEWS for one year:

	Price of Book alone.	With CAL. ARCH. and B. N.
Steel Square Problems	\$ 0.50	\$2.15
Steel Square and its Uses	.75	2.25
Builders' Price Book and Estimators' Guide	2.00	3.50
Palliser's Useful Details	2.00	3.25
American Cottage Homes	3.00	4.25
Modern Architectural Designs and Details	10.00	11.00
Detail Cottage and Constructive Architecture	10.00	11.00
Village and Country Homes	5.00	6.00
Science of Carpentry	5.00	5.50
Plasterers' Manual	.75	2.25
Artistic Homes	3.50	5.00
Interiors and Interior Details	7.50	8.50
Practical Lessons in Architectural Drawing	2.50	4.00
Gould's Carpentry	2.50	4.00
American Stair Builder	3.00	4.25
Modern House Carpenter's Companion	1.25	3.00
Art of Saw Filing	.75	2.25
Grimshaw on Saws	4.00	5.00
Carpenters' Pocket-Book	1.00	2.50
Foundations and Foundation Walls	1.50	3.00
Ames' Alphabets	1.50	3.00
Old Homes made New	1.50	3.00
Francis's Monuments and Tombstones	9.00	10.00
Wither's Church Architecture	10.00	11.00
Sewer Gas and its Dangers	1.25	2.75
Workshop Companion	.35	2.10
Reed's Houses for Everybody	1.50	3.00

Any one sending us the names of three new subscribers, with \$6, will receive a copy of the CALIFORNIA ARCHITECT AND BUILDING NEWS free.

Any one sending us the names of ten new subscribers, with \$20, will receive a copy of the CALIFORNIA ARCHITECT AND BUILDING NEWS free, and \$5 worth of books selected from the above list.

A club of twenty-five new subscribers entitles the sender to a copy of the CALIFORNIA ARCHITECT AND BUILDING NEWS, and \$20 worth of books selected from the above list.

The Use and Abuse of Screws in Wood-work.

Archimedes is credited with the invention of the screw, but whether the famous geometrician's labors extended much further than the enunciation of the scientific principles and the mechanical power of the screw, it is difficult to say. If he made a screw, he certainly must have tried its effect, and was probably well pleased with its performance, for in the whole range of mechanical appliances in the constructive arts there is not a more useful article than the screw. Archimedes is further reported to have said, "Give me a prop, a position, and a lever strong enough, and I will move the world," and, no doubt, if these conditions could be granted to him, he, as well as others after him, could lift the earth, or aught upon the earth, by a combination of the tremendous lifting and driving powers exercised by a series of screws, apart from the lever. Screws are various, and of various sizes, forms, and materials, but the same principal runs through them all, whether they be manufactured for use in metal or wood-work, or for expecting a lifting, driving, or pressing power separately. Our object here is not to treat of screw-cutting, but rather screw-driving in wood-work, and to throw out some useful hints to the building constituency, and particularly workmen. The use and abuse of screws is a matter of importance to architects, builders, and their clients, for according to the way screws may be applied in several building and kindred operations that good or bad workmanship will be evidenced.

Screws are more extensively used than formerly in putting together various kinds of wood framing, and even in cabinet and chair work screws are pressed into service in places where their use would not have been tolerated by manufacturers in the earlier portion of the present century. Although their existence is generally concealed in furniture and fancy work, they are often present, nevertheless, and too often they are used as a substitute for dowels, dovetails, and tenons in the manufacture of cheap work. It is an instructive and remarkable fact that our building workmen of a century or two back, in many operations in carpentry and joinery, discarded, as far as was possible, the use of nails or screws, depending more on carefully jointed work, put together by means of mortise and tenon, dovetail, hard-wood dowel, or oaken pin. Their work might have taken a longer time to execute than that done by our present race of joiners and wood-workers, but it was infinitely more lasting, and kept together so long as the timber or wood continued sound. The nearly universal remedy now for every broken article on the part of the jobbing joiner and cabinet-maker is to repair it with the aid of a nail or a screw. Glue is even often dispensed with, or used where it will exercise little sustaining power, and colored putty is not only made to cover the heads of sunken nails and screws on the face of a piece of work, but used also to hide bad joints and workmanship. Some years ago the writer examined an old oaken staircase and hand-rail in a college, which work was executed more than two centuries since, and in the construction of which not a nail nor a screw was used. From time to time, over long years, some slight repairs were made, but the workmen during their operations were never able to discover that a nail had been used in the original construction. There were mortises and tenons, grooves and tonguing, wooden pins or dowel work, but no iron fastening of any kind. The writer also examined more than one old roof in which the use of iron spikes, nails, and other iron fastenings was dispensed with, and the joining of the timber was effected without their aid. In the hinging of doors and other frame-work it is necessary to use screws, but, unfortunately,

many workmen, if not watched or cautioned, will not do the screwing properly or in a workmanlike manner. In deal, pine, and other soft woods a brad-awl is sufficient to make an opening for the screw, which opening, of course, should be less than the thickness of the body, and short of the length of the screws used. It will be found, however, that most workmen, not content with tapping the screw a fourth of an inch or so to give it a hold before applying the screw-driver, will actually drive the screw into the wood two-thirds of its length with the hammer. This the workmen will do to save themselves trouble. If there be two hinges upon a door, and if each hinge has eight screw-holes—four in each plate—the chances are that the workmen will drive half of the screws nearly home in the door-stile and frame with his hammer rather than take the trouble of driving them gradually home with the screw-driver. Hence, if the door be a massive or heavy one, the weight of it will tend to the hinges loosening, and after a time will follow a train of other ills—the "dragging" and "rubbing" of doors, and their makeshift cure is what is known as "easing" them. If remonstrated with for driving a screw nearly home with the hammer, the workman may probably say (as some workmen certainly think) that a few turns of the screw in the wood are sufficient. This is an erroneous and mischievous idea. A screw that is nearly driven its whole length with a hammer cannot make a regular and corresponding thread or spiral in the wood, and therefore its binding and maintaining power in keeping the hinge in its place is all but gone. Workmen should be made to drive every screw home gradually with the screw-driver, and not only an odd one. In hardwood operations as well as in soft woods, particularly in hinge work, screws should be properly driven, and the aperture or opening made for the passage of the screws should be much less than the thickness of the screw to be driven. The screw will bite a sufficient passage for itself. In hard wood, however, it is necessary to give a little more freedom of entry to the screw than in soft wood, and a gimlet is needed for making the suitable opening instead of the brad-awl.

A difficulty is often experienced by persons who wish to withdraw a screw, by finding that though it will turn round under the application of the screw-driver, yet it will not unscrew out. In this case a well-grounded suspicion may be entertained that the screw in question was driven, or nearly driven, home originally by the hammer, instead of gradually by the screw-driver, and that no regular thread corresponding with the screw exists in the wood. Under such circumstances it becomes necessary often to wrench off the hinge or hinges by force, at the risk of their breaking, and this often happens. When hinges have lain undisturbed for years on old doors or other framings, perhaps for a quarter of a century or double that time, it becomes difficult to extract the screws, although they may have been originally properly driven. This arises from the screws rusting in the wood and sometimes from other causes. Workmen themselves often fail to withdraw a screw, and are forced to break the hinge to enable them to get under the head of the screw, and wrench it out. They often split, and break too, fancy and delicate woodwork articles in their efforts to take off hinges, locks, mountings, and other finishings, despite that simple method exist for extracting screws that have rusted in the wood. One of the most simple and readiest methods for loosening a rusted screw is to apply heat to the head of the screw. A small bar or rod of iron, flat at the end, if reddened in the fire and applied for a couple or three minutes to the head of the rusted screw will, as soon as it heats the screw, render its withdrawal as easy by the screw-driver as if it was only a recently

inserted screw. As there is a kitchen poker in every house, that instrument, if heated at its extremity, and applied for a few minutes to the head of the screw or screws, will do the required work of loosening, and an ordinary screw-driver will do the rest without causing the least damage, trouble, or vexation of spirit. In all work above the common kind, where it is necessary to use screws, and particularly in hinge-work and mountings, fancy fastenings and appliances affixed to joinery or furniture work, we would advise the oiling of screws or the dipping their points in grease before driving them. This will render them more easy to drive and also to withdraw, and it will undoubtedly retard for a longer time the action of rusting.

As matters obtain now in carpentry, joinery, furniture, and other wood workmanship, with regard to screws, although they cannot be dispensed with, yet it would be advisable in sundry classes of wood-work to minimize their use, and in other cases to do without them altogether. They can seldom be used with advantage to the displacement of mortise and tenon or good dovetail or dowel work. The growing practice of putting together wood with screws bespeaks a decadence of skilled labor, and of nails and screws there are far too many pressed into service in workshops and dwellings. While admitting the usefulness of the screw in various ways, we have here endeavored briefly to show its abuse in wood-work, and at the same time to afford some hints for better methods of procedure in building and kindred workmanship.

To Young Architects.

A worthy literary friend, having a taste in early life for the violin, was told by his master that to succeed he must serve an apprenticeship of seven years, practicing ten hours a day, and then he might expect to know a little. Let young architects likewise realize what is before them, and cultivate the power of executing artistic sketching and design in all their multifarious branches, Gothic and Classic, Medieval and Ancient, and practice the modes of executing such work in pencil and pen, color and crayon, and likewise seek acquaintance with the most natural as well as approved methods of construction; and acquire a facility to calculate the various strains, breaking, crushing, and safe weights of all the known materials under their varying circumstances; understand the many kinds of timber and stone, metals, and materials of all descriptions; acquire familiarity with all the various artificers' work, bricklayer and mason, carpenter and ironfounder, slater and plasterer, plumber and painter, glazier and decorator, efficiency to any one of which it takes the artificer himself a lifetime to acquire; and learn the technicalities of the measuring and pricing in these various trades, of which the artificer himself is in many cases uninformed; study sanitation, ventilation, and the jurisprudence of building, Building Acts, Fire Prevention Acts, Sanitary Acts, and all the Local Government Board requirements, the light and air, the party-wall and compensation cases; start with the level and theodolite, and study the technicalities of land surveying; and by the time they have further learned what are the requisites for good planning, in all the known requirements of modern dwellings, ecclesiastical, manufacturing, and public buildings, they will, at any rate, be ready for starting business on their own account.

Knowledge is power, and the duly qualified architect should not be among the least powerful in the community.

Advice to apprentices: Begin at the bottom of your business and work up. N. B. Well-diggers excepted.

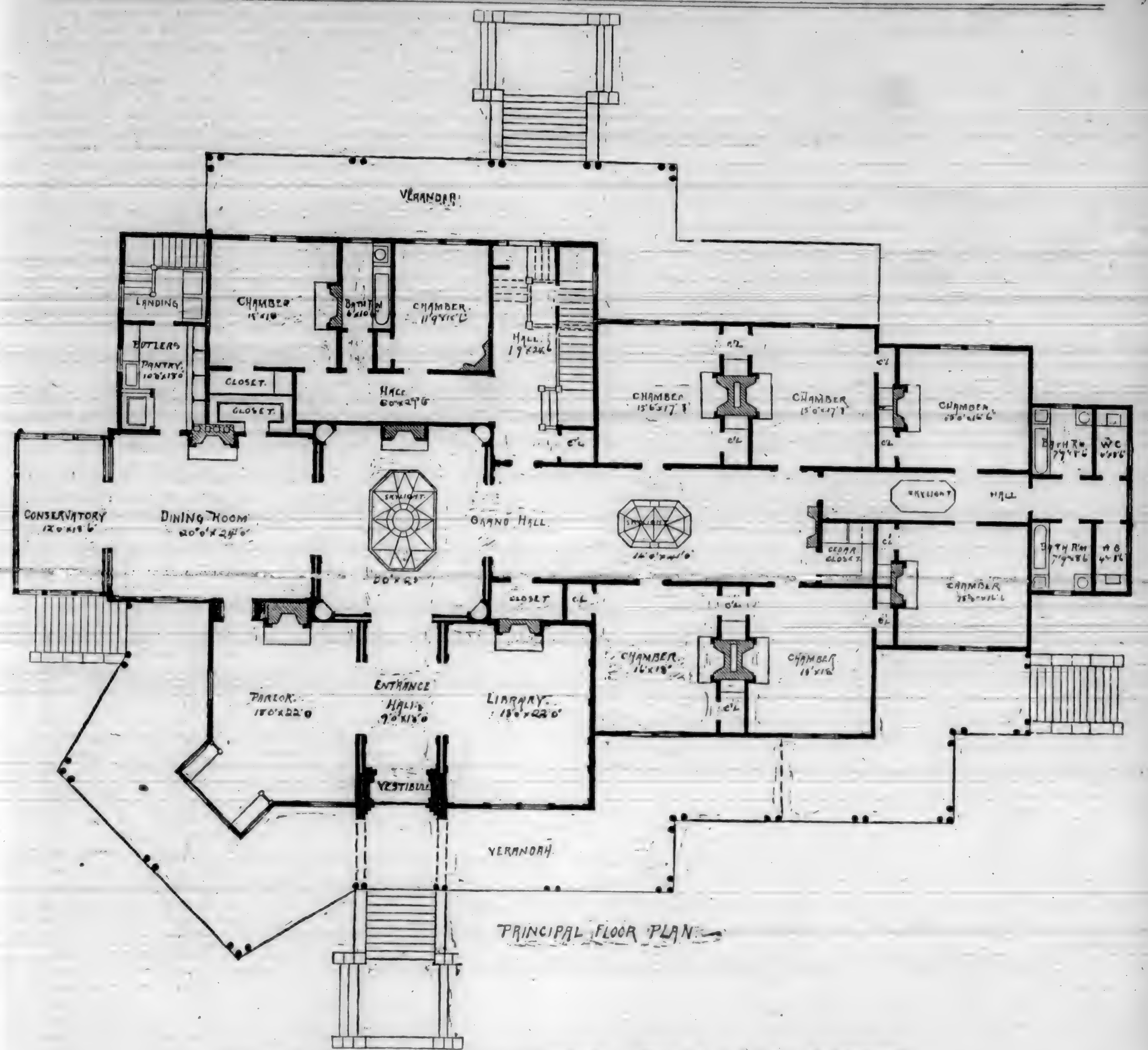


PLATE 3.—PLAN OF COUNTRY RESIDENCE. NEWSOM & GASH, ARCHITECTS.

How to Clean Pens.

A writer in a German paper states that it is a custom in offices in that country to have a sliced potato on the desk in commercial houses. He does not state whether the esculent should be raw or not, but as it is not for the purpose of making kartoffel-salat, it is probably raw. It is used to clean steel pens, and generally acts as a pen-wiper. It removes all ink-crust, and gives a peculiarly smooth flow to the ink. He also states that the Hamburg clerks pass new pens two or three times through a gas flame, and then the ink will flow freely.

The pleasant odor of cedar seems inseparable from the wood. Pieces of white cedar stumps which had long been under water at the entrance of New York harbor had the odor of newly grown wood.

Scandinavian Floors.

The chamber floors found in the northern parts of Sweden and Norway are laid with boards cut from the tree without being sawed parallel, and consequently retaining all the taper of the tree. The edges of the boards are tongued and grooved, and the joiners who cut the tongues and grooves work in pairs, one pulling and the other propelling the tool that does the work. In consequence of the boards tapering, they are laid with a broad and narrow end, meeting alternately, and thus a dovetail is effected along the whole length of the boards, and a very curious appearance is the result.—*Timber Trades Journal.*

\$4.25.

We will send the "California Architect and Building News" for 1883, and one copy of "American Cottage Homes," for \$4.25.

IVES' PATENT DOOR BOLTS.



Sold by all Hardware Dealers.
(APPLIED WHOLLY BY BORING.)
HOBART B. IVES, NEW HAVEN, CONN.
Sole Manufacturer and Patentee.

As we predicted a year ago, the introduction of the above celebrated bolts is driving all the poorer quality entirely out of market; and wherever one goes on the Pacific Coast, he will find the Ives patent to be the popular safeguard against the intrusion of burglars. They are for sale by all of our principal hardware dealers.

\$3.50.

We will send the "California Architect and Building News" for 1883, and one copy of "Palliser's Useful Details," for \$3.50.

Ambiguous Specifications.

Ambiguous specifications are due either to carelessness or want of practical knowledge. In either case they are to be condemned. In the former case they are especially to be condemned. There may be an excuse for a want of practical knowledge; there is none for carelessness. Orderly arrangement and adequate description are naturally to be expected. The specification is as needful as the drawings, and if it be incomplete the architect's work is imperfect, and so in all probability will be the work of the builder. The incompleteness of a specification is a sure sign of an unstudied building. A well-prepared specification proves thought, and makes the architect master of his design. But if he do not himself understand it, he cannot expect others to understand it. They may, guess at his meaning; but guesses, when money, appearance, and durability are at stake, are not advisable. Obscure intentions cannot be embodied in lucid instructions. Nor can obscure thoughts. Want of knowledge may sometimes be concealed in generalities; but in specifications, when concealed, it is often revealed. The studious avoidance of practical details tells its tale; and when generalities soar, the result is not invariably happy.

Stereotyped specifications are likewise the cause of confusion. Stereotyped specifications are mostly ambiguous specifications. Specifications to be serviceable should be adapted to requirements, and, as the requirements of no two jobs are alike in every respect, the stereotyped specification will only apply in part. Cutting out and inserting in no way improve them. Every job requires its separate specification. The outline, or general arrangement, of specifications may be—in fact, should be,—similar, so far as the test of practice stamps it with approval. But all the nice explanations of details required for each job should be strictly original, and introduced at the right places, that the estimator and the foreman may readily comprehend the architect's wish or intention.

Ambiguous specification are downright evils. They offer loopholes for evasions and furnish grounds for exactions. To them is doubtless attributable the great difference frequently seen in tendering. As read by some, certain works are suggested; as read by others these works are overlooked. The shrewd, careful reader notes that certain works are necessary, but he does not provide for them, knowing to a certainty that others will not. Were he to provide for them the job would be lost, and if he lost the job he would for certain nothing gain; whereas, by taking it in its incompleteness he has at least the possibility of gain. The bareness of the possibility is a strong temptation to wrong. Thus it is that swindling occasionally begins with putting in the foundations and ends with scrubbing the floors. Where lies the fault? In the architect's office or the builder's? The truthful answer is—in both.

Keenness of competition means lowness of price; lowness of price entails cutting of work; cutting of work is another name for theft; and theft by rights should send man to prison. When a builder takes work in the full consciousness of the specification's incompleteness, he burdens himself with the responsibility of the due performance of all things needful. However loose or vague a specification may be, it is pretty well sure to contain some such stipulations as these: "The contractor shall provide for all works, and do all the several matters and things required for the thorough performance of the contract"; and "the contractor shall hand over the building clean and perfect throughout on completion." In submitting his tender, he announces his determination to execute the work in accordance with the specification, and since the specification requires thoroughness, honor asserts that

thoroughness should be had. This, however, is no excuse for the architect. The work should be clearly specified in his office, then all would tender alike; fair prices should be obtained, and the evils of sharp practice should be banished. There will be a certain amount of sharp practice under any circumstances so long as men are in haste to get rich, but the fault and the blame would then rest with the evil-door. If when a specification is clear, or tolerably clear, the shifty contrived to disregard its plainness and wrest its obvious meaning, much worse must the case be with a specification that even the honest can barely understand. This proves the need of clearness. If the work of the ambiguous specification is honorably performed, the builder has to pay the penalty of the architect's negligence.

Hammers.

To most persons a hammer is simply a hammer, but every mechanic knows that there is a great variety of hammers, from the tiny lump of steel with which the watch-maker taps the mandril of a balance-wheel to the huge trip-hammer under which tons of hot iron are molded into shape. The hammer, in fact, plays an important part in the mechanic arts, each one presenting its peculiar form, size, weight, and material. In some trades there is great skill and dexterity required in the use of the hammer. Any one who has seen the operation of riveting a boiler has admired the sleight of hand with which the strikers round up the head of a rivet in less time than it takes to write about it. The blows follow one another with wonderful accuracy and rapidity, and when the rivet-head is finished it looks as smooth and regular as if it had been cast in a burnished mold. Take even the process of driving an ordinary nail, and it is remarkable what a difference there is in the method of a novice and that of a carpenter. The one hits one side, often bends or breaks the nail, or bruises the finger that holds it. The carpenter hits with precision, and drives the nail home with well-directed blows. The deft hammering of coppersmiths is proverbial, pounding metal into any required shape. The copper plates that are used by engravers are hammered hard in long strips by the use of large steel hammers with faces as smooth as that of a mirror. The most accurate hitting is required in this process, because the hammer-face is flat, and must be held perfectly level to avoid cutting deep gashes in the plates. When it is necessary to make bevels on these plates, a skilled workman will make a bevel with a hammer in a few minutes that would require hours if made by filing and polishing. Silversmiths learn to be very expert in the use of the hammer. Spectacle-makers can take the temples of a pair of ladies' spectacles and temper them by dexterous planishing between hammer and anvil. A blacksmith always has an assortment of hammers with which to shape the ductile iron. File-cutters are required to use hammers with great judgment. Each tooth in a hand-made file is made by the burr raised by tapping a sharp chisel held to the soft file. After each blow the chisel is set up against the burr of the last stroke and another burr is raised, and so on until the file is finished. The force of the blow measures the size of the burr raised, so that the regularity of the file depends upon the evenness of the hammer-stroke. Many files are made by transferring processes by machinery, but the hand-made files command the highest price, while with many peculiar forms of files the hand-work is indispensable, and the regularity of hammer-work a necessity. One of the most difficult jobs to be done with a hammer is to straighten large flat plates of metal. An expert workman will here do, with a few strokes of the hammer well directed, work that a non-expert

cannot do at all. Indeed, without great skill, the attempt to straighten plates with a hammer generally results in making the crookedness worse. The gold-beater's hammer is wielded day by day by the trained hand, although an hour of it would fatigue the novice. The calker has a peculiar long hammer. The ax and the adze are but sharpened hammers. Machinists use great copper hammers for work where they wish to strike blows without marring the object struck. Among the queerest hammers in use is a magnetic hammer. There was once a Yankee peddler who used one of these to great advantage. He was peddling a fancy soap. He would go into a store, pull out his advertising card, "Buy my unequalled soap," and before the astonished store-keeper could remonstrate he would tack up one of his cards on a rafter or wall where it could not be taken down without a step-ladder. The way he did it was to hold up his card to the required spot with one outstretched arm, standing on tiptoe. He had a magnetized hammer with a long handle, and in his mouth a few tacks. He put one tack on the hammer, point outward, and with one tap sunk it into the required place to secure his card out of reach. Recently, in South Brooklyn, a tall bill-poster pursued this plan of posting advertisement-cards on telegraph poles so high that it required the line-men to climb up the poles to get the cards down.—*Ec.*

Extra Work on Buildings.

It is of course open to the builder to prefer a claim for extra work. Then come other evils. The claim is perhaps compromised. Omissions are made to set against extras; this may be just as between the architect and the builder; but it is just as between the architect and the proprietor? If the "extras" were necessary, and the "omissions" were likewise necessary, the house must originally and eventually have been a long way removed from the requisite completeness. If the claim is allowed, the builder receives justice. But how stands the case with the architect and the proprietor? It is then the latter who pays the penalty of his adviser's negligence. If, as sometimes happens, the claim is disputed, an angry controversy ensues; and the architect being his own arbitrator, the builder goes to the wall. What then becomes of justice between the architect and the builder? If, as sometimes happens, the claim is wholly ignored, the architect carries the point, the proprietor has his house—but what becomes of justice between the three? Whatever works are necessary in the opinion of the architect, but not shown on his drawings, or set forth or implied in his specification, are justly deemed extras, justly claimed as extras, and should be justly paid as extras. To withhold payment for work executed is theft, as much as the willful omission of contract work is theft. It is all very well to point to the clauses of an ambiguous specification, clauses wide enough to embrace everything under the sun, and show that the building is to be given up perfect. Ideas differ widely as to perfection. The man who has tendered from an ambiguous specification thinks his work perfect when he has executed soundly all necessary works. The author of the ambiguous specification may include in his idea of perfection many other works not actually necessary. This, therefore, should be an axiom in the composition of a specification. Every essential work, and every work of opinion and taste, and all nice points of construction, should be clearly specified and explained; while all minor works, if not described at length, should be explicitly mentioned, or at least, clearly implied.

Subscription price of this journal is \$2.00 in advance.

Book Notices.

The Builders' Guide and Estimators' Price Book.

This work is chiefly intended to assist the Builder and Contractor, in making estimates of the cost of work they may be competing for. A great deal of information often required by contractors cannot be obtained without trouble and serious loss of time, consequently their estimates are frequently guessed at, and then tenders for construction are either absurdly too high or ridiculously low. This little book is intended, in a measure, to remedy this defect in estimating, by bringing before the estimator the details to be estimated as far as possible, and their approximate cost. It is impossible, however, to quote prices that will suit every locality, or all time, but we have provided for this by leaving a blank column where prices may be entered in pencil to suit locality and time. The prices given in this book are only intended to form a basis upon which the contractor can place a percentage; they are approximately correct, but in all cases we advise a comparison with the prices current. We will send a copy to any address upon receipt of the publisher's price, \$2.

The Modern House-Carpenter's Companion and Builder's Guide.

By W. A. Sylvester. Pocket size, 114 pages, 35 full-page plates. Cloth, price, \$1.25.

Many workmen have wondered why some practical carpenter did not get up a hand-book on carpentering for the coat-pocket, which contained rules and illustrations for doing such jobs of work as are constantly required, with reliable information to assist in estimating the cost and other matters essential to carpenters and builders, that could be sold at a price within the reach of every workman. Here is just that book. It has much information not usually given in large and costly works on carpentry (of from \$3 to \$15), and will be of great convenience to workmen. Among the illustrations and descriptions of the different kinds of work are the following: Pitch, hip, valley, mansard, and French roofs, trusses, the angle rafter on a French roof, straight and winding stairs, splayed and circular work, mitering circular moldings, rake moldings, gothic and elliptic arches, etc.; also information to assist in estimating on stone work, brick work, framing and boarding, lathing and plastering, clapboarding and shingling; thicknesses and weights per sq. ft. of sheet lead and zinc for flashings, table of board, plank and scantling measures; table of braces, table giving the sizes, thicknesses and weights of sash for 2, 4 and 12 lighted windows, sizes of frames, and amount of line required for each weight; also sizes of sash for skylights and cellar windows; table of square roots of numbers from 1 to 100, table of diameters, circumferences and weights of circles, from 1/64 inch to 24 inches; table of decimal parts of feet and inches, with fractional equivalents, etc.; rules for estimating sizes of bins to hold a given number of bushels of grain, apples, or potatoes; or a given number tons of coal; for estimating size of tank to hold a certain number of gallons; table giving the weights of various materials, besides a few arithmetical rules, including the metric system, tables of weights and measures, making the handbook most complete for the price yet published. It is a book which every workman should own, in order to accomplish his work properly, and to thereby fit himself to become a master of his trade, whether he intends ever going into business on his own account or not. The book is actually indispensable to the master carpenter or builder who would avail himself of every advantage that can be of service to him in his business. Copies mailed to any part of the United States on receipt of price.

The Slide Rule, Simplified, Explained and Illustrated.

Showing its wonderful powers of calculations, and its rapidity in solving all questions relative to MECHANICAL TRADES. Designed especially for the instruction of YOUNG CARPENTERS AND JOINERS.

The design of this work is to furnish a cheap and simple illustration of the marvelous powers of the SLIDE RULE, an instrument capable of giving the young carpenter a most thorough and practical instruction in the principles of his art, and clearly imparting the means by which difficulties may be overcome, and yielding an inexhaustible source from whence he may continually draw supplies to enable him to consummate his designs with vigor and success, thus preventing a waste of time, labor and material, which everywhere arises from want of knowledge and skill.

The slide rule is not a modern invention. It was known about the time Wm. Penn landed in Pennsylvania, and founded the city of Philadelphia. Yet, strange to say, after the lapse of so many years, an instrument combining so much of everything that a workman should know, has, in this country, been allowed to remain almost unknown, except as a tool for the most common purposes, entirely different from what was intended by its ingenious inventor.

We can heartily recommend this work to our mechanics, as far excellence the best book treating on the Slide Rule yet published. It is a large-sized book, illustrated by 32 full-page plates descriptive of the problems involved by the use of the Slide Rule, with a clear explanation of all the principles connected therewith.

We will mail a copy to any address upon receipt of the publisher's price, \$3.

\$2.50.

We will send the "California Architect and Building News" for 1883, and one copy of "Falconer's Celebrated Work on Monuments," for \$10.00. Every architect and marble-worker should have a copy of this work.

Proposed Plumbers' Registration Law.

In previous issues we have noticed the fact of a movement among the plumbers of San Francisco, having for its object the passage of a law by the legislature at its next session, which will confer certain powers upon the Board of Health, in reference to the sewerages and plumbing work of all buildings which may be erected after its passage, and requiring the registration of all master and journeymen plumbers, etc.

This is a movement in the right direction, but it will require very sound and far-reaching judgment on the part of those managing the matter, to so frame and shape the intended enactment, as to render its working and enforcement both practical and certain. It is a matter of question whether a law or "an act" of the character proposed by the printed form issued by the plumber's organization would furnish the remedy sought for, unless improved and strengthened in several particulars. While the object aimed at is to introduce and impose such restrictions and regulations in the execution of plumbing work as will prevent the terrible botchery heretofore so extensively practiced in this city and State, and while all competent and qualified plumbers will readily comply with the requirements of such a law, the tinsmiths, stove-dealers, tailors, and other frauds who style themselves "practical plumbers," while enjoying no practical knowledge of the plumber's art, will also assume the forms of registration for the purpose of securing a legal badge as plumber, although in practice a mechanical ass. This feature should be guarded, and covered by the provisions of the law, so that those only who are qualified by thorough, practical experience as plumbers, or who have made plumbing and sanitary science a matter of intelligent study, should be permitted to undertake plumbing work. We contend that in all the mechanical departments of labor, where human life and health is to any considerable extent dependent upon the manner of execution, it is right and proper that laws should be enacted calculated to protect the public health. To prevent malpractice, and save communities from fraudism in medical science, the law provides that those who claim to be doctors must possess certain evidence as to their qualifications, in the form of diplomas, before they are permitted to avail themselves of the privileges conceded and accorded to those fortified with the necessary emblems of qualification. In numerous other connections, the right to practice and pursue is properly restricted and regulated by national and State laws; and there are numerous good and sufficient reasons why individual rights should be restricted by law in the matter of plumbing work, as its improper execution is one of death's most effective weapons in separating loved ones forever. We are aware that this more serious view of the matter does not receive the attention its nature and importance demands; still the great fact that tens of thousands die yearly through the agency of sewer-gas machinery—i. e., poorly executed plumbing work—remains and repeats itself every moment of time; and if the intelligent gentlemen engaged in the matter under notice succeed in securing the enactment of a law which will remedy the evils complained of, they will be entitled to everlasting remembrance by the community at large, and by the reputable architects in San Francisco in particular.

\$10.00.

We will send the "California Architect and Building News" for 1883, and one copy of "Falconer's Celebrated Work on Monuments," for \$10.00. Every architect and marble-worker should have a copy of this work.

A GREAT MISTAKE.

Special to Those Who Advertise.

The advertiser who reaps the harvest from advertising is the man who keeps his announcements before the world all the time, year in and year out, when business is good and when business is dull. It is the spasmodic advertiser, the man who goes in for two or three months and then drops out for six months, who will tell you that advertising does not pay. Probably it does not pay him, but it pays his competitor who has the shrewdness and courage to keep his name and address staring people in the face all the time. If everybody was ready to buy a certain article at a certain season, and wouldn't buy at any other time, then advertising in this particular season would completely cover the ground; but people buy at all times, and if you want their business you mustn't drop out of sight, even for a day.

Fairbanks, the scale man, knew what he was about when he gave an advertising solicitor an order, although he had more business than he could attend to, remarking that his reason for doing so and for keeping his name constantly in print was to so familiarize people with his scales, that when a school-boy in the backwoods spelt scales he would think of Fairbanks. He knew, further, that the boy who connected his name with scales would sometime become a man and a possible purchaser.

We heard of a salesman not long since who happened to be traveling for a firm that didn't believe much in advertising. He said it took him longer to explain to customers who his firm was than it did to sell the goods, when he succeeded in making a sale.

The indirect effects of advertising are often far greater than the direct results. The head of a large house once told the writer that while his firm advertised to the extent of many thousands of dollars yearly, they received no orders to speak of direct from their advertising. The indirect results, however, were all that could be desired. No salesman has any occasion to waste his time in a historical and biographical description of the members of his firm. They are known wherever the English language is spoken and in other foreign countries.

The moral is plain—keep your name so prominently before the public in connection with the special article you manufacture, that when that article is wanted your name will instantly be thought of as the maker.

Sewer Gas in Barber Shops.

A new danger has been discovered by the *Lancet*, a danger of breathing sewer gas from the waste pipes of barber's basins, when being shampooed. The danger is the more serious, because the whiff of germ-laden gas would pass unnoticed among the scents and sweet odors of the barber shop, and the unconscious victim, while breathing rose and jasmine, would also be absorbing the bacteria of various diseases. Probably the basins of the average barber shop are no better plumbed than other fixtures, are untrapped wastes and syphoned traps may make as many open connections with the drain as are found in the average of other buildings, but, on the whole, we regret that the *Lancet* has directed attention to this subject, because it gives opportunity to the barber to ask the man in the chair to take one more article than is on the list now. When the present category of oils and scents, bay rum and hair reviver is gone through, there will hereafter remain the inquiry, "whether the m. c. will not take a little disinfectant through an atomizer. On behalf of the shaved community we protest.

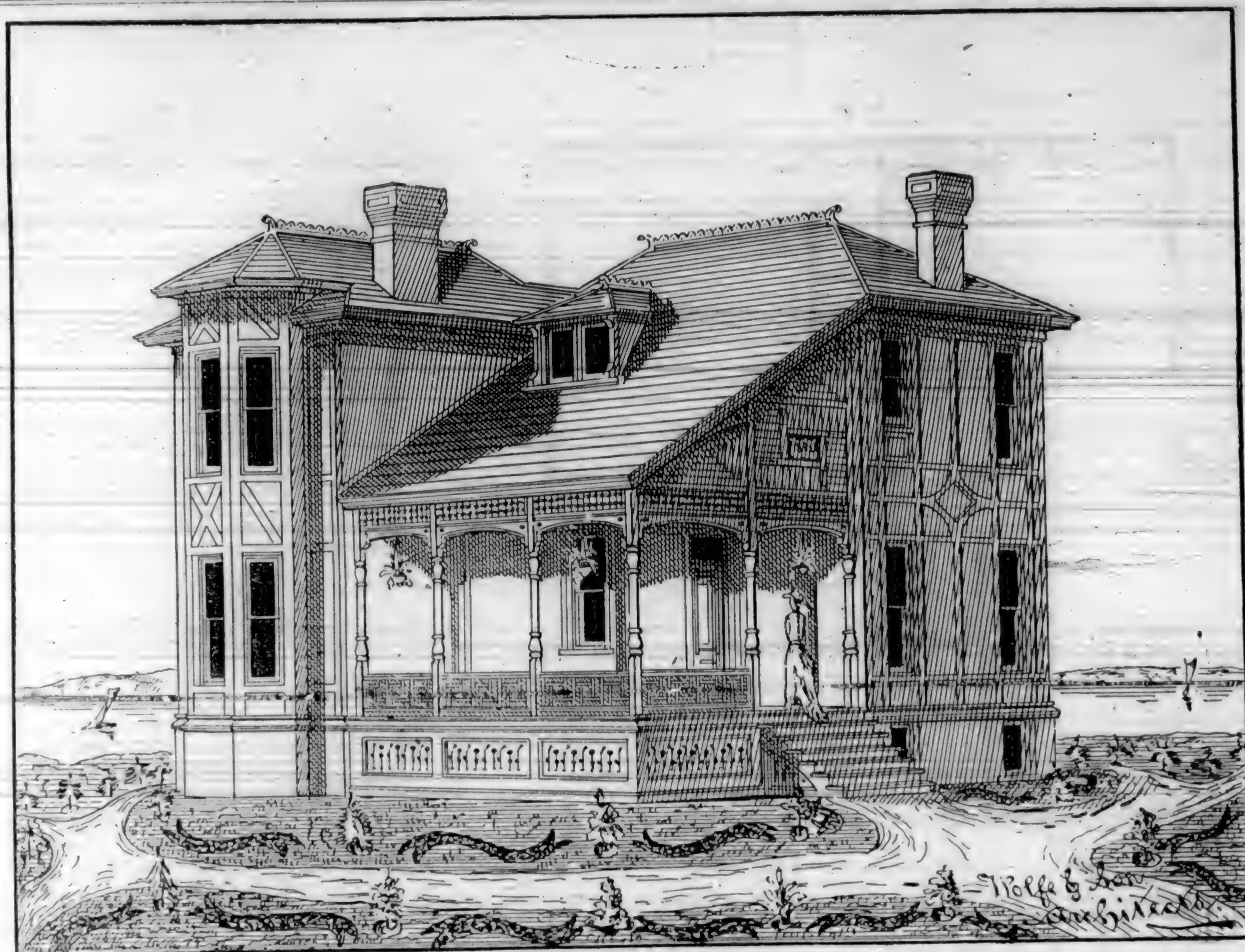


PLATE 4.—SUBURBAN DWELLING COSTING \$3,500.

Tar Roofs.

The London *Builder* says that the German government has on several occasions pointed out to farmers and others interested in agriculture that too great an expenditure of capital on buildings is a mistake. With a view of illustrating the application of this principle of economy to roofing, the *Cologne Gazette* points out that the system of using tar for roofing purposes is at the same time economical and suitable for agricultural buildings, and what is said may serve as an answer to a recent inquiry in our own pages. The framework of the roof can be of relatively slight construction on account of the nature of the covering it is intended to support, and the perpendicular height of the roof can be one-eighth to one-tenth of the entire depth of the building. The distance of the rafters is arranged according to the width of the covering material, the scale being that from the middle of one rafter to the middle of another. The distance should be $2\frac{1}{2}$ inches less than the width of tar roofing sheets.

Immediately upon the rafters comes boards, and upon these (exactly in the center of the separate rafters) are placed strong laths, about 2 in. wide and $1\frac{1}{2}$ in. thick, the upper edges being taken off. The roofing sheets are now placed so as to cover the spaces between the laths, and are nailed. Over the laths are placed strips of paper, 5 in. to 6 in. wide, fastened with nails at intervals of $2\frac{1}{2}$ in.

In order to make the sheets lie smoothly upon the boarding, it is suggested, in case they are too dry, to soften them by immersion in water. It is recommended that the workmen should not wear heavy-nailed boots, and also, that if the

rain comes on, the roof should not be walked upon immediately after. When the entire surface of the roofs is covered with sheets, the strips of paper (or caps) already named, as well as the joints, are painted over with a hot mixture of coal tar and pulverized lime. Pure dry sand is at once sprinkled over this coating, and particular care must be taken that all the nail-heads are well covered. When the paint is dry the whole surface of the roof is once more coated with the same mixture, and is sanded.

The object of this careful method of overlaying the roof with several coatings of specially prepared solutions is to preserve in the tar those oleaginous and fatty properties which it soon loses if exposed to the air, and the retention of which is an indispensable condition of its resistance to water. Clay and sand do not afford sufficient protection, and they are removed by violent winds.

Reference is made to various systems of coating the tar roof with protective substances, for the purpose indicated. One of the most successful methods consists of a mixture of cow dung and thin white lime, which is spread over the entire surface of the roof. If such a coating is not applied the tar paint must, during the first four years, be annually renewed, which enhances the cost of the roof. If the last-named protective composition is used, and renewed every two years, the coating of tar and lime can be dispensed with. Particular mention is, however, made of a coating of tar mixed with Portland cement, the tar being well heated and used in the proportion of 111 pounds to 200 pounds of cement. The mixture should be kept well stirred during the preparation, and should be applied as soon as made. This particular

method has been tried in many cases in Germany, and, according to the journal quoted from, its satisfactory results have caused its adoption upon a scale of progressive importance.

Re-gumming Circular Saws.

It is estimated that three times re-gumming a non-perforated circular saw costs nearly the price of a new saw. Perforations in the line of the gullet lessen this cost. The metal in the track of the perforations is softer than the teeth, because the sawdust left in them when the plate is scoured, after tempering, burns when the plate is flattened, and draws the temper of the holes.—*Grimshaw on Saws.*

Breathe pure air, if you would have sound lungs. It is wicked for a young girl with weak lungs to sit on the anxious seat in a house of prayer, where the exhalations of a thousand bodies and the poison of carbonic oxide fill the closed room, even if the preacher seems to her like God's angel. Pure air in the house, pure air in the hall, pure air in the workshop, pure air in the church—this is the prime necessity, and without this, upholstery and painted glass, and labor-saving inventions, and the prayers of the man of God, are all mockery. The gospel of pure air is the saving gospel to those who mourn that so many are cut off in the morning of their days, and that consumption is the scourge of the race of man.—*Herald of Health.*

WE \$4.25. WE

We will send the "California Architect and Building News" for 1883, and one copy of "American Cottage Homes," for \$4.25.

EVERYBODY'S COLUMN.

"FAS EST AD HOSIE DOCTRI.".

"To find the inclination of roofs that the shingles may last the longest."

The shingles will last the longest (other things being equal) when the roof dries more quickly, which will be the case when the water runs off as rapidly as possible.

We have not space to print the full algebraical solution, but the result shows that the height of the roof above the eaves should equal half the width of the house—that is, one half pitch. In practice, however, roofs are seldom made so steep in this part of the country.

FRIEND ARCHITECT: Please tell me how to compute the number of joists it takes in a building when spaced 16 inches from centers.

AMATEUR.

ANS.—Multiply the length of the building in feet by 3, and divide the product by 4. For instance: the building is 124 feet long— $124 \times 3 = 372 \div 4 = 93$, the number of joists required. This rule is applicable, no matter what the thickness of joists may be, as long as they are spaced 16 inches from centers. Allow one extra, except when the end sills are utilized in place of joist. Of course deduct when the latter is the case.

During a recent tornado in Brewer, Me., a plank was blown with such force against a cistern with wooden walls an inch and a half thick, that the board penetrated some distance through the wall into the water. It was found that the board was wedged in so closely that the water did not leak, and the owner simply sawed the plank off, leaving the wall in the cistern all right.

WE \$3.50. WE

We will send the "California Architect and Building News" for 1883, and one copy of "Palliser's Useful Details," for \$3.50.

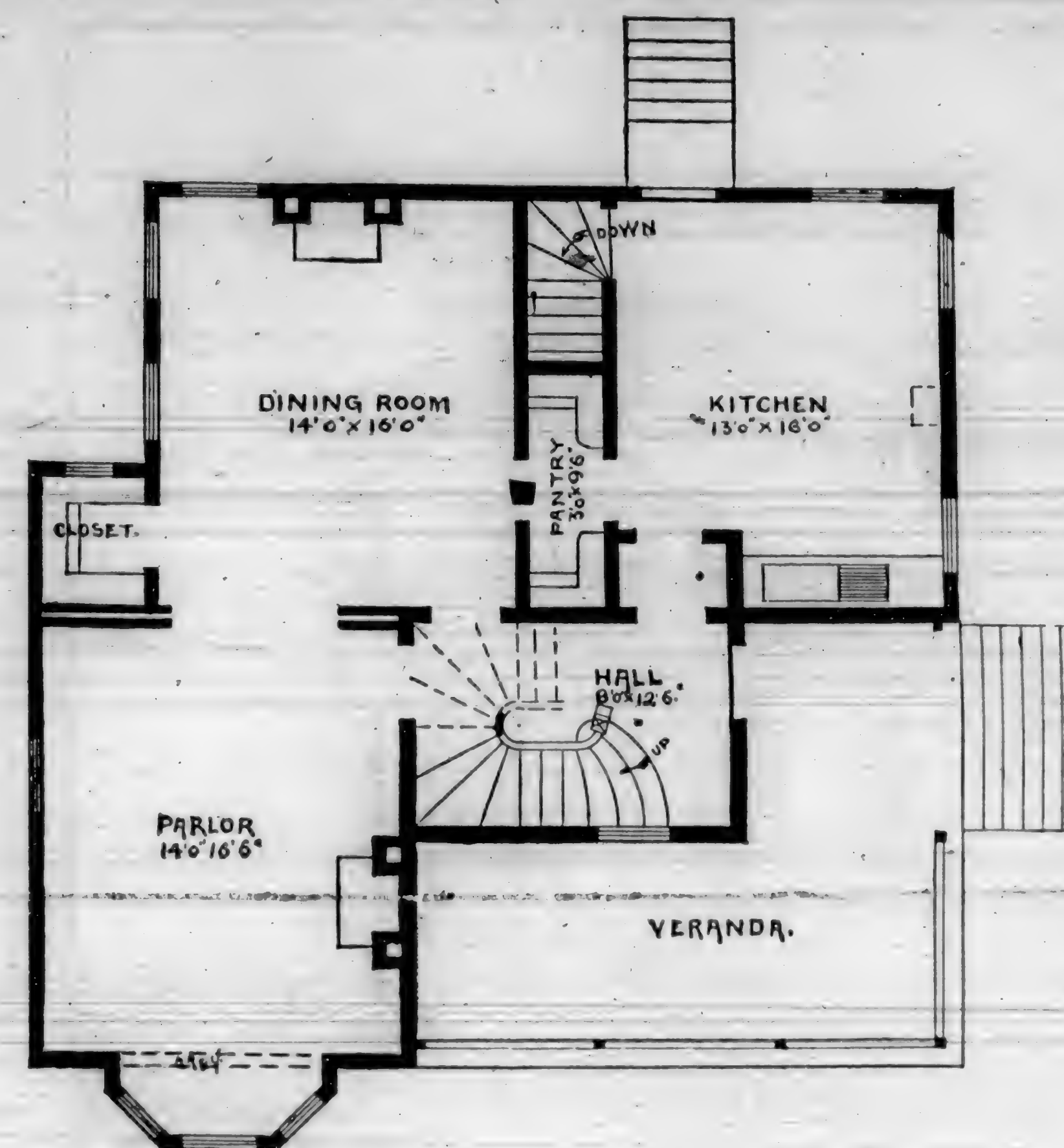


PLATE 5.—FIRST FLOOR PLAN OF SUBURBAN DWELLING.

The Gig Saw.

The spring strained saw, commonly known as the gig, jig, fret, or scroll saw, has a pull cut only; the return being effected by the same means that keep it strained. It is light running, and generally used for cutting out fine curved or scroll work, although of late years the band saw is superseding it for outside work.

Gig sawing really divides itself into two branches—sawing in irregular shapes on the outside of a piece of material, and the same process on the inside, known as fret work.

The short and readily detachable blades of the strained gig saw can be so quickly withdrawn from one cut and inserted in another starting hole, that the band saw has no chance to enter the field of fret work.

It may be said to have influenced American architecture, which seems largely to have been arranged so as to give every opportunity possible, from crest and barge board to porch and railing, for the display of scroll sawing.

Regarding the antiquity of the saw, it is instanced that a frame saw is shown in a painting of Heracleum. The sawyers are at each end, one standing and the other sitting. The bench to which the timber is secured by clamps is supported by four-legged stools. The saw blade is strained in the middle; the teeth stand perpendicularly to the plane of the frame. Frame saws were common in Egypt many centuries previous to this time.

WE \$5.50. WE

We will send the "Science of Carpentry Made Easy" and the "California Architect and Building News" for one year, for the sum of \$5.50.

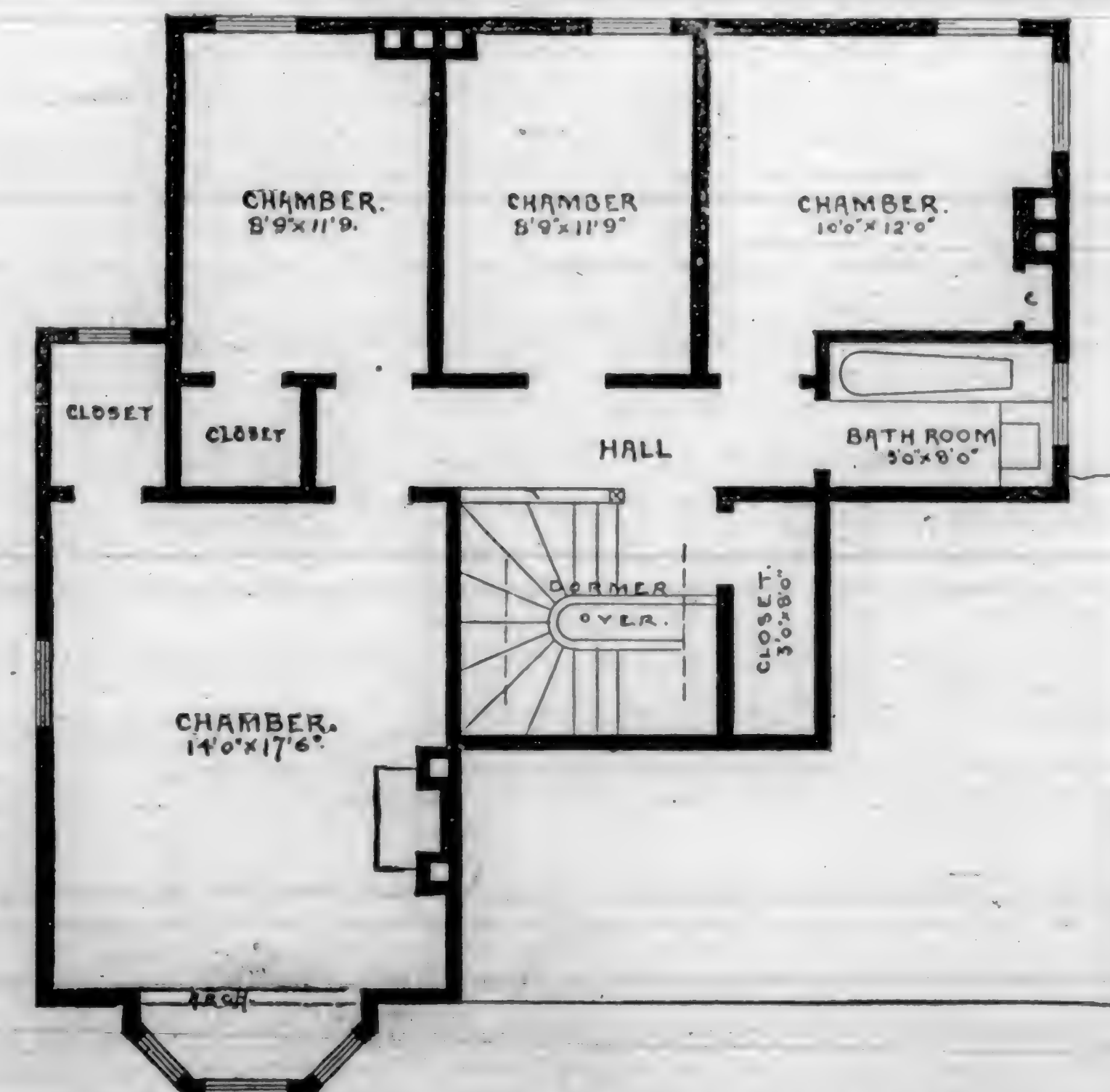


PLATE 6.—SECOND FLOOR PLAN OF SUBURBAN DWELLING.

Sixteenth Annual Session of the American Institute of Architects.

The Institute convened in annual session at Cincinnati, Oct. 26th, 1882. In the absence of President Walter, E. S. Littell of the New York Chapter presided, A. J. Bloor performing the duties of his office as Secretary. The annual address was delivered by Col. George Ward Nichols of the Cincinnati College of Music. The various reports of officers, trustees, and committees were received and duly acted upon; also the names of new members elected since the session of 1881 as Fellows of the Institute, among which are the following from San Francisco: Seth Babson, G. W. Sanders, James E. Wolfe, John Wright, William Curlett, Thomas J. Welsh, (Augustus A. Laver has also been a Fellow member for many years, and it is mainly through his influence that the union between the San Francisco organization and the parent institution was brought about. This representation of seven members in the grand body gives to California rather more than its quota, as the total membership of the Institute is restricted by its laws to seventy-five). Various subjects and matters of interest were introduced, discussed, and considered, bearing upon the numerous important features involved in the science and practice of architecture in its more intelligent and comprehensive senses. The matter of increasing the limit of membership to one hundred Fellows (without limitation to Associate membership) was discussed at length, together with other changes in the present rules and organic laws of the Institute.

At two o'clock the officers and members and invited guests of the Institute sat down to a sumptuous repast and enjoyed the hospitalities of Cincinnati Chapter. The remaining hours of the afternoon were spent in visiting the various more important buildings of the city; and, by special invitation of Mrs. George Ward Nichols, the Rockwood pottery. The citizens of Cincinnati seem to have vied with each other in extending invitations and hospitalities, and the Merchantile Library threw open their doors for the free use of the members of the Institute.

The evening session was called to order by the president *pro tem*. The nominating committee reported the following as officers for the ensuing year: For President, Thomas W. Walter of Philadelphia; Treasurer, O. P. Hatfield, New York; Secretary, William R. Ware, New York; Board of Trustees, H. M. Congdon, I. C. Cady, A. J. Bloor, Napoleon Le Brun, all of New York; Committee on Publication, A. J. Bloor, New York; H. H. Holly, New York; John McArthur, Jr., Philadelphia; Geo. C. Mason, Jr., Newport, Rhode Island; Committee on Education, Professor W. R. Ware, New York; Professor N. Clifford Ricker, Champaign, Illinois; H. Van Brunt, Boston, Massachusetts; Alfred Stone, Providence, Rhode Island; A. Potter, New York; Secretary of Foreign Correspondence, T. M. Clark, Boston; all of whom were unanimously elected. The thanks of the Institute were expressed by a rising vote to retiring Secretary Bloor, for his efficiency as Secretary during the term of his office.

The second day of the session was opened at 10 A. M. A salutary letter from San Francisco Chapter, and communications from other sources, were read.

The report of the Secretary for Foreign Correspondence was read, giving among other things an account of the discovery of the remains of an important Roman town near the City of Thomar in Portugal, made by the Chevalier de Silva, of Lisbon. It was known that Thomar was situated upon or near the site of the Roman town of Nabactia, but no important traces of the latter have been found until M. de

Silva, amusing himself during a morning walk in the fields by turning over a few sods with his cane, almost immediately exposed a fragment of mosaic pavement. The discovery was followed up, and it appears from his last letters that other pavements have been found, and the forms and situation of the principal buildings of the ancient city ascertained.

Mr. Clem Olhaber, smoke inspector of Cincinnati, made statements in reference to smoke consumers. He stated that there were 400 smoke consumers within the circuit of his duties, working well and satisfactory to all parties, and that he met with but little opposition to the enforcement of the smoke ordinance. (It is about time that smoke consumers were ordained into use in San Francisco. We see no good reason why persons or companies should enjoy rights and privileges in the erection of smoke stacks and chimneys, to the injury of large districts of valuable tenement property and residences. And as our cable-street railroads and others disregard the interests of the community in this respect, they should be compelled by imperative laws to comply with the laws of equitable rights, which recognize no privilege in any person or persons to enhance their own interests to the injury of others.)

Mr. A. C. Nash of Cincinnati read an able paper "in regard to the establishment of a valid test of professional ability," in which was urged the establishment of a board of examiners, composed of gentlemen eminent for their professional attainments, whose duty it should be to ascertain by rigid examination the qualifications of candidates for degrees, with vested rights to grant diplomas in accordance with the rank and standing of the applicants.

(There should be National and State boards of this character, established by Congress and State Legislatures, so as to prevent the assumption of the title of architects by those who arrogate to themselves the name of architect, while grossly ignorant of the grand principles and science upon which architecture rests. We shall revert to this subject hereafter.—Ed.)

An elaborate paper by Glenn Brown of Washington, D. C., in reference to "water-closets," was presented by Secretary Bloor. (It will be remembered that a series of articles written by Mr. Brown especially for this journal appeared in its columns during the past few months.)

On motion of Mr. Crapsey, the convention adjourned to meet at Providence and Newport, subject to the call of the Board of Trustees.

The session throughout appears to have been pleasant in a general sense to those attending, and especially profitable in the numerous valuable matters and subjects introduced. The Institute is certainly doing a good work by its organization, and the intelligent and educated of the profession should to a man, by their membership and attendance at its yearly gatherings, assist in the grand objects of the Institute, thereby, to some extent at least, helping to resist and hold back the tide of degeneracy which has to so large an extent flooded in upon the profession through the encroachments of unqualified pretenders and the indifference of the truly qualified to defend and sustain their high calling in life.

An old Hungarian miller is reported to have given this rule for telling a good millstone: "When about to select a stone, take a flask of gin and pour it upon the stone; if the stone absorbs the liquor so that the surface appears dry, it is a good one; but if the gin remains on the surface, the stone is good for nothing."

We would suggest that the same rule will not apply to the selection of a miller.

Subscription price of this journal is \$2.00 in advance.

More Railroad Inventions Wanted.

With the rapidly increasing traffic on American railroads there is a demand for greater facilities for loading and unloading freight. It would seem that an improvement in the construction of warehouses might be made that would render the rapid handling of heavy freight an easy matter, as compared to the present clumsy and inconvenient structures.

There is hardly any country station but has more or less heavy freight to handle, and frequently much trouble is experienced for the want of proper appliances for the work. Of course at terminal stations something has been done by way of cranes and derricks, hoisting machinery, etc., but even the best regulated warehouses are open to radical improvements in apparatus and appliances for moving heavy as well as light and bulky freight. This is worth the study of inventors.

There is also a chance for improving platforms, so that moving goods from the cars to the warehouses may be an easy matter, without the use of the ordinary trucks.

Another thing that interferes with the rapid handling of freight is the location of the doors of freight cars midway between the ends. Ordinarily, this is the proper place for the door, and is preferable for a single door. But if a car were so constructed that goods could be loaded in any part of its length, it would certainly be more convenient than with a central door. This might be accomplished by constructing the car with a system of slide doors the entire length of its sides, so that a car might be loaded in sections, and much sooner than if loaded from the middle. This would also facilitate unloading. Appliances for loading and unloading goods from platform cars are nearly satisfactory, but may be improved.

This is an inviting field for the inventor. But if any American inventor would reach the top of the ladder of fame at a single bound, let him produce a station indicator that will inform railway passengers where they are when they arrive at a station. How well the human machine fails to do this is well known by every railway traveler. For a brakeman to speak the name of a station so that any human being can understand it seems to be one of the lost arts, and it remains for the inventor to produce a substitute to perform this duty. This has already been accomplished so far as "braking" is concerned. Now let us have a reliable station indicator.

Then there is a want of a humane invention to prevent people being caught in frogs and switches, guard rails, etc. Hundreds of people are killed or maimed every year by being caught in the "boot-jack" portion of frogs and held fast, and run down by cars or locomotives. This trap is a peculiar one. A person slides his foot into the wedge-shaped opening, where it is held in horizontally, while the rail heads prevent his lifting his foot vertically, and before he can extricate himself he is a mangled corpse. Some devices have been tried to prevent these horrors, but none is effective. It will not do to fill this space with any rigid substance, for the wheel flanges must have room. Some yielding substance, as a spring, may be made to fill the space, so as to keep the feet out of the trap and yield to the pressure of wheel flanges. This is a serious evil, and there is no doubt that the railway community will reward the inventor who will produce an effective remedy.—W. S. H., in *Scientific American*.

A log was recently cut on Skagit waters, Puget Sound, which was nine feet in diameter at the stump. The first cut was 24 feet long, and the next log 32 feet in length, and 78 inches in diameter at the big end, while the third was 36 feet long, and measured 63 inches—in all 92 feet of logs, and an average diameter of over five feet.



ACME VENTILATOR

This is of double the usual power for producing a vacuum for the Exhaustion of Sewer Gas, Foul Air, or for increasing Chimney Draft, and the Principle is equally applicable for raising water as in that of a Steam Injector, and with increased power to those in general use.

By reference to the illustration it will be seen that the chamber C is for the exit of the contents of pipe or pipes D, which is in communication with the apartment or apartments below to be acted on. The chamber C is surrounded by the atmospheric current BB, passing by its mouth between the COWLS, and it also surrounds the atmospheric current passing through the center at A. By this means the inside and outside, (all around) the mouth of the exit chamber C is acted on to produce a partial vacuum by both atmospheric currents of double the usual power for exhausting the sewer gas, foul air, or increasing the smoke draft, or other gaseous substance to be drawn up and floated away in space. In some devices the mouth of exit pipe C is only surrounded by one passing atmospheric current BB, and in others it surrounds and receives only the influence of the atmospheric current at A passing through the center, neither combining but the single feature and acting on one edge only; while this device combines both features, acting on both edges to draw and drain the whole. In the devices mentioned having the influence of but one atmospheric current, may be likened in a degree to that of a stream of water quiet in one-half its width, and the other half, by an incoming stream, may be moving rapidly forward. The action of the water at rest where the moving current impinges on its side is not to move it forward as a whole, but to reverse the motion in part as it approaches the bank or shore, as the shore retains its hold in its quiet state, as that of the moving current opposite is to move it forward, hence reverse action takes place near the shore to that of the moving current which cause the eddies we see along the shores of our rivers. The point or line of inertia of a large body acted only upon at its rim or edge, instead of effecting to move its whole area, is likened to the instance mentioned. The atmospheric pressure at the earth's surface is fourteen and three-fourths pounds per square inch, or 2124 pounds per square foot. The passing through of the two atmospheric currents B and A, shown in the drawing, creates a partial vacuum by its operation on both sides of the mouth of the chamber C, and the atmospheric pressure at the lower end or connections of pipe D, being fourteen and three-fourths pounds to the inch, forces up the foul air, sewer gas, or whatever may be the contents of the apartments below to restore the equilibrium.

The principle of this device is equally applicable as an improved steam injector, the steam passing through the chambers B and A, which are of diminished size and enclosed at one end, creating a vacuum in chamber C, which will have great power for lifting liquids as well as gasses.

P. H. JACKSON.

These Ventilators are on Sale by the Plumbers of San Francisco and Oakland.

P. H. JACKSON & CO.

No. 2 California Street and 231 First Street,
SAN FRANCISCO, CAL.

State Rights For Sale.

FRANKLIN GIRDER

The Most Economical Construction Made.

It is so proportioned and equalized that the opposing forces and strains in a great measure neutralize each other, by which means the material in use is economically employed, so that the price for them for buildings is **about one-half of those in common use in this city.** They are made of any length and to sustain any desired load: the proportion of the safe to the breaking load being as 1 is to 3, or for a girder to sustain 100 tons, the breaking load will not be less than 300 tons, and guaranteed as such in every case. The scientific Press of this country and Europe have most favorably commented on this invention, as the Scientific Press, Scientific American, Railway Review, The California Architect and Building News, and Architect and Builder; also the London Engineer, and Paris and German scientific Papers. Two of these girders, 25 feet long, sustain the front wall, 17 inches thick, of Mr. Somer's new building on Market Street, opposite Dupont Street, this city. The rise or verse sine of these girders for the bay windows over them can be kept within any limit usual in such cases. They are made of any length for buildings not to exceed 50 feet, and to sustain any load not exceeding 1000 tons. For Bridges, the length and sustaining capacity may be increased.

P. H. JACKSON,
Civil Engineer.

P. H. JACKSON & CO.
No. 2 CALIFORNIA STREET,
AND
231 FIRST STREET,
SAN FRANCISCO, CAL.

Illustrated Explanatory Sheets sent on application.

State Rights for sale.

UTILIZE YOUR BASEMENT APARTMENTS IN THE BUSINESS PART OF THE CITY BY USING Hyatt's Patent Illuminating Roof & Patent Basement Extension

SEE ALL NEW BUILDINGS ON THE BEST BUSINESS PART OF THE CITY.

The present dark, damp cellars, or coal vaults of old buildings made light, cheerful, and well ventilated business apartments. Ingall's Patent Refracting Ungula Lens, of great refracting power, and of a form difficult of breakage either by extremes of temperature, or by hard usage incident to travel over their surface. These, used in conjunction with mirrors, reflect the rays of light below the beams to the rear of dark basements. Refracting lens of any kind will not direct the light back where the illuminating tiling is above the ceiling; hence the use of reflectors requisite in such cases.

P. H. JACKSON & CO.
Sole Licensees for Pacific Coast,
2 California Street and 231 First Street,
SAN FRANCISCO, CAL.

Architects' Superintendence.

A case of considerable importance to architects and employers came before the Nottingham County Court recently, and is reported in the *Building News*. The simple facts of the case were these: An architect of the above town sued a local physician for the balance of an account owing for professional services. The defendant instructed the plaintiff to prepare plans for a house in the "Aesthetic style." A tender was accepted, and the plaintiff informed the defendant that it was necessary to appoint a clerk of works, as it was not expected that an architect could visit the building more than twice or three times a week, and it was the duty of the clerk of works to superintend the minor details. The defendant, however, thought a clerk of works unnecessary. The building was finished, and the plaintiff sent in his account; but the defendant paid only a portion of it, as he contended there were certain details not properly carried out, that the drains were defective, and the house consequently unhealthy. It was contended at the trial that these were details which could not properly come under the architect's notice; but that would have been obviated by the employment of a clerk of works. His honor took this side of the matter, and ultimately a verdict for the plaintiff was given for £25 and costs. The case has more than one point of interest for the architect and the employer: there is a certain amount of supervision expected from the architect, under the ordinary and customary usage of the profession. What does this consist in, and how many visits ought an architect to make a week to a building which he has undertaken to superintend? It so happens there is no written or traditional rule of the profession which defines such attention, and that in point of fact architects have to consult their own time and convenience in superintendence of works under their charge. It is a hard thing to say how much attention an architect ought to give to a work. The answer would necessarily depend on various considerations: the kind of contractor employed, his character for honesty and integrity, the class of building, whether it required more than usual care in details, the size and cost of the building, etc. It would be simply impossible to lay down a hard-and-fast rule: each case must be judged on its merits. Of course it is no excuse for an architect to plead a large practice, and that in consequence he could not make so many visits to a certain building; the cost of the building ought not also to have anything to do with the superintendence: for if an architect, in however an extensive a practice, takes a work, he is expected to carry out his engagement as much as any less busy practitioner. And men of large practices can well afford to leave small works to small men. An employer at least expects to receive from his architect such a fair amount of supervision as will guarantee to him that the work has been carried out in accordance with the design and intention of the specification; and yet it is possible to conceive such an amount of supervision inadequate to detect errors in workmanship or scamped work, such as bad drainage details. For example: no ordinary amount of supervision on the part of the architect can obviate such a blunder as giving a drain a deficient fall, of making a clumsy or imperfect junction with the sewer, of seeing that every pipe is sound and well jointed, or that the joints and workmanship of the interior sanitary arrangements are perfect in every detail. These are things likely to be neglected directly after the architect's back is turned. Nor, for the same reason, could an architect be charged for negligence in not detecting every bad brick or piece of timber introduced. It would be clearly out of reason to expect him to be always present on the works and watch everything done or every material

brought into the building; so that the superintendence of an architect can only be reasonably understood to mean a general inspection of the works, and this is the opinion the judge of the Nottingham County Court formed upon the evidence adduced. Referring to the details, he said "these were clearly the duties of a clerk of the work, and if the defendants did not choose to engage one, he must abide by the consequence, for an architect could not be expected to be present to superintend these details." The law affecting building contracts is not very explicit with regard to the question of the architect's duties in this respect. The law imposes on an architect, that he should be duly qualified to practice his profession, and that he should use a reasonable amount of care and skill in its practice. In ordinary contracts there is nothing said about what an architect's superintendence means. No case appears to have been decided, which defines the limits of the architect's authority in the general superintendence of works, and in the absence of such terms the duty has to be implied, and the law, indeed, dictates what any prudent man would consider fair. When an architect undertakes to superintend the erection of a building, he is supposed to exercise a reasonable amount of skill and attention, and the law would imply neither more nor less. The case we have quoted so far defines the limit of the architect's duties in respect of general superintendence, and, in the absence of an express agreement, the evidence of usage only is admissible. It is to be regretted that we have no decisions or legal authority which define the architect's duties with regard to superintendence, for them is ample evidence in the architect's practice to prove that much of the success of a contract work depends upon the attention given to details. Yet the case decided the other day shows what the legal mind would understand as reasonable in similar cases, and to this extent it will be useful as an authority.

Our readers may ask what is implied by reasonable superintendence. It is quite certain, as we have said, that an architect can only be required to exercise a general supervision over the works. The setting out of the building correctly, the construction of the walls and floors and roofs, so far at least as they relate to their proper thickness, materials, and strength to resist pressure or weight, are all matters which strictly come within the architect's duty to see properly executed, as these are all matters for which his skill as an architect has been retained. They are matters also which always upon the proper carrying out of the drawings and specifications, for it is very evident if a wall blew or fell down, or a floor gave way, it would imply a want of due skill in proportioning the thickness of the wall or the beams of the floor; and as these things are shown in drawings, the architect is reasonably expected to see that they are carried out. But it may be fairly surmised that he cannot be held responsible for the introduction of inferior materials, or even for the bad workmanship of any part of a building over which he can only give a general supervision. If a wall gives way or a floor breaks down from bad material introduced in the substance of it, or from an imperfect connection or detail, which could not reasonably have been inferred from the specification and intention of the architect, he is clearly not liable, but the builder is the responsible party. Of course, we are supposing no case of negligence on the part of the architect to be proved. By the French code both the architect and the builder are liable during ten years for negligent construction, and a similar code, we believe, is in force in Lower Canada. With regard to drains, they are generally left to circumstances, and the architect rarely does more than indicate their position on the plan. The levels, joints, and junctions, are points which, however important to be attended to, cannot

fairly be said to come within the architect's general superintendence, as usually implied in building contracts. The law, in fact, holds the architect responsible for all relating to design and construction, but cannot require him to exercise the same care as regards workmanship, as it would be unreasonable to suppose he could always be on the works. The question, indeed, is of such vital importance to architects, that it naturally brings to the front another of considerable moment; namely, the employment of a clerk of works. It seems to us that architects whose practice is extensive should require in all cases the employment of clerks of works. In country practice of a moderate kind it is usual to do without their services, yet the saving is dearly purchased, and the demands made on the architect become more onerous. It is to the interest of the architect that a clerk of works be employed, and it is certainly to the interest of the employer. In no building is it possible to see that all the materials and labor are of the nature described in the specification and shown in the drawings, without one; and we think it the duty of the profession to lay down some rule by which they may place themselves in a position of independence. When ought the clerk of works to be employed, and on what kind of work? are questions that might very well be left to an architect's discretion. In the case we have mentioned the plaintiff informed his employer that a clerk of works must be engaged, as an architect could not be expected to visit a building more than twice or three times a week. The defendant refused to have one, and the result was that the drains were defective. The judge observed, with much truth, that a clerk of works could not be considered merely as an ornamental appendage, for, as a matter of fact, the duties he was expected to perform were of a very important character. If architects desire to maintain their position as general supervisors of buildings, the sooner they come to a decision on these questions the better; and the employment of an efficient clerk of works ought to be considered almost as necessary a condition of good building as the employment of an architect.

Items of Interest.

A new form of window is being introduced in London, England, for preventing accidents in cleaning, and securing good ventilation. The two side-bars of each of a pair of ordinary sash frames are divided into two parts vertically, and the part carrying the glass is swiveled or pivoted in the side pieces, at a point central to its height. The frame with the glass is held in position by two small bolts in the top rail, which shoot into the side strips. When this latter fastening is effected, the two sashes may slide up and down in an ordinary way. It will be seen that to clean this kind of window there is no necessity for servants to go outside.

The placing of the plumbing business of New York under control of the Board of Health is working a much-needed reform in that city. Instances are constantly coming to light showing that unscrupulous plumbers have greatly hazarded the health of their customers by dishonest work. This fact appears as often in the dwellings of the better classes, where expense has not been spared, as in the residences of poor people. Suits for damages have been successfully prosecuted against plumbers, in a number of instances. This new law requiring scientific inspection of plumbing works admirably in New York, and it would be well if it were enforced in all large cities.

We will send the "California Architect and Building News" for 1883, and one copy of "Frankie's Celebrated Work on Monuments," for \$10.00. Every architect and marble-worker should have a copy of this work.

