

Early Plastering and Plasterers.

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centuries destroyed, by their white-washing processes, many fine specimens of wall-painting and fresco-work. In some instances, careful manipulation on the part of artists and architects has succeeded, says the *Brick and Tile Gazette*, in saving the fresco-painting, but in many cases the thin coat of plaster forming the ground of the painting unfortunately came off with the coat of outside white-wash. An older system of plastering, known as pargeting, or pergeting, was once very general. The term, as it is known in the present day, only applies to coarse plastering inside chimney flues, and between joists of floors. Formerly pargeting was understood in several senses: sometimes it was plain plastering, but generally it was used in connection with ornamental work, including mouldings, figures, foliage, and various other enrichments, sunk and raised. The Elizabethan half-timber houses exhibited on their exteriors ornamental pargeting betimes. In different towns throughout the kingdom houses formerly of the date to which we are referring displayed small figures, and canopies surmounting them, executed in plaster work. The plasterer may put in a claim for much good work in the past as well as an alliance with distinguished artists. The plasterer in the case of fresco-painting had always to be in readiness to render the wall with a coat of coarse stucco formed of lime and sand, which was finished over with a finer material to produce the requisite surface for the artist. Though the ancients were ignorant of the use of oils and varnishes, the fresco-painter, from the very nature of his work, had to evidence marvelous dexterity and skill, rapidity of execution, and a truly educated eye, all these being essential in the efficient performance of his labor. His subordinate, the plasterer, no doubt felt an inward pleasure, at least, that he prepared a good ground or basis for the successful work that resulted.

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Old building practices, like national pastimes and customs, take a long time to die. The builder of the mud cabin still flourishes in portions of her Majesty's dominions, and the thatcher still turns our good ornamental work, as well as the tiler. After long centuries the "cob" wall constructor, the dauber, the rustic carpenter, the hedger, and the dry-wall field mason still vegetate, and find paying patrons. History is repeating itself, for have we not men coming forward again to prove that reeds are better than laths for plaster work, forgetting that our great-great-grandfathers used the vegetable growth, and never thought it worth while seeking a patent to protect its use?—*Building News (London)*.

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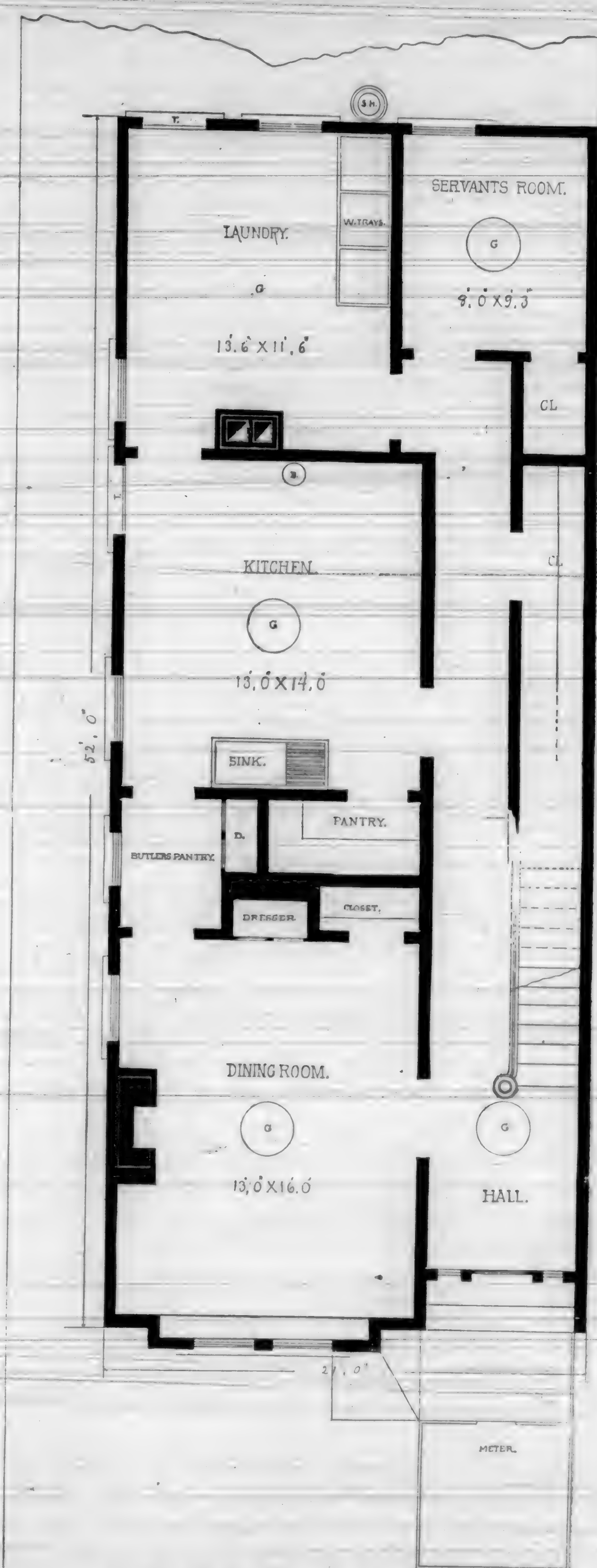


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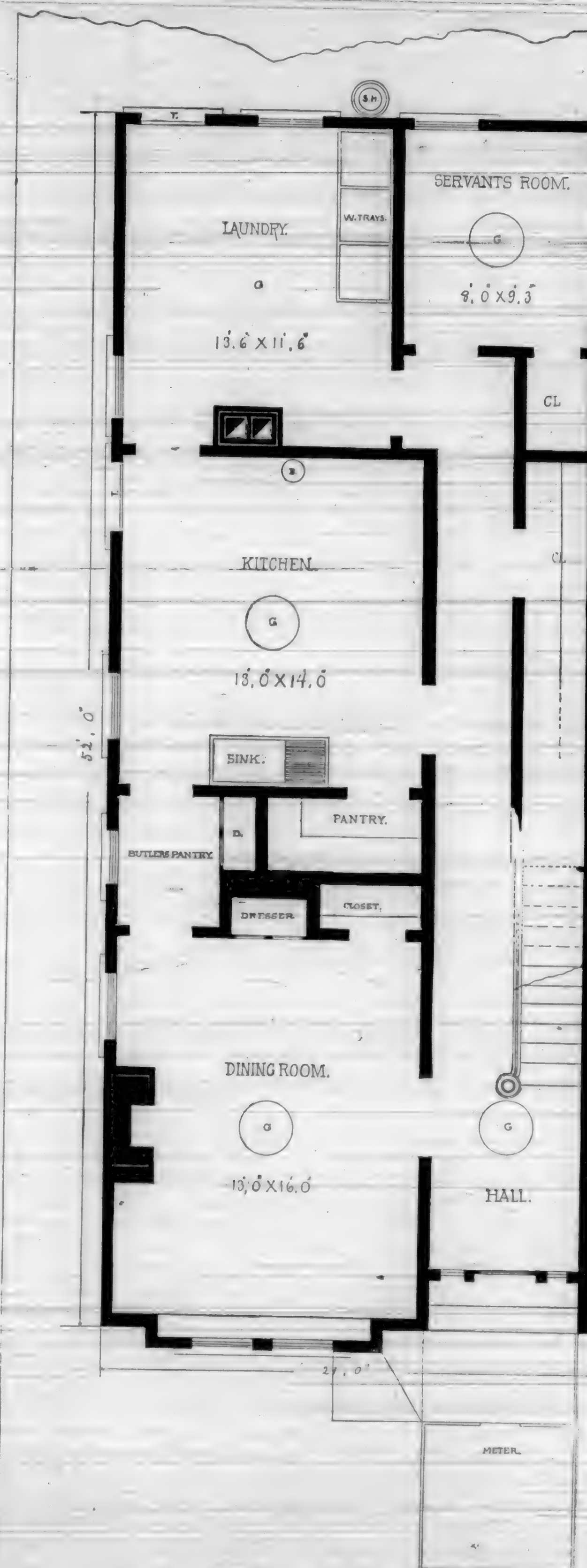


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The Chinese Infliction.

It is not very difficult to understand why the people of the Eastern States are slow to accept the situation,—the living facts of everyday life on the Pacific Coast. There has been testimony sufficient adduced, and facts innumerable clearly proven, to convince any one who is not *unwilling to be convinced*, that the presence of the Chinese race in considerable number in any civilized community or county, is bad in every sense of the word—practically ruinous in ten thousand ways; and if not effectually and permanently restricted, will lead to results of the most damaging character, as far as the political, moral, and general interests of the country are concerned. If, step by step, and year after year, they increase in numbers, and the people of the United States tolerate their presence, and permit them to work into all the trades and avenues of manufacture and labor, and yield to them the rights and privileges of the people of the "most favored nations," the next that will follow will be enfranchisement and political rights. It may require time to bring this about, perhaps a half century, but we have seen evolutions and results even as great, which within fifty years have brought about changes of the most gigantic character. Let the thoughtful mind run back over the ten past decades, and gather up, and put together all the facts and results of that period of time, and then dare to face the possibilities of the next half century, by an assertion that any stupendous change and overturning is impossible.

The Chinese are by no means "fools." They are the opposite of that,—cunning, artful, selfish, perfidious, untruthful whenever a lie will serve a purpose,—without a single moral sentiment that will not yield to the slightest temptation, and consequently a corrupt and dangerous element in both a political and moral sense to tamper with; and if permitted to gain a sustained and sustaining foothold—a position that will render them secure against the influences which are now so loudly demanding restriction, and contending against their encroachments upon and into the rights of the laboring, manufacturing, trading, commercial, and other interests of the country, the babes and infants of the present day will be compelled to encounter a condition of things which, if thrown suddenly upon the present men and women of the United States, would cause a rebellion of stupendous character, and cause a slaughter greater than has ever been in the world's history. The men of to-day could not be restrained or controlled, if the attempt was made to force them at once to accept a state of things such as the Chinese incubus is bound to bring upon their children, perhaps within a generation, if with impunity, as in the past, they are permitted to continue their aggressive methods, growing stronger and more potent and powerful with the years as they pass, encroaching upon, endangering, and undermining the life prospects,

hopes, and comforts of millions of our own people, who seek to live as free men should live, in the enjoyment of this free and good land of liberty, where the laborer is worthy of his hire; and none should be forced to bow the knee to oppressive conditions, nor wear the yoke of perpetual servitude, as the result of competition with beings who know not, nor care for, any of the higher, more ennobling, and purer sentiments which actuate men and women of pure minds and holy purposes.

During the past thirty-five years, the rank seed of Chineseism has been planted, first upon the soil of California, where it has taken deep root and gained sturdy growth, with wide-spreading branches, and root tendrils shooting in all directions. They laugh at the clever case with which they beat the laws of the land, and defy the legislative and judicial powers of the Government, swearing away and nugating the enactments designed to fit their cases, and which, for all practical purposes, is perfectly clear and conclusive, except for the false swearing of the creatures themselves, and a word technicality which should be set aside as immaterial to the intents and purposes contemplated by the law-making power of a free and enlightened Government.

Says a correspondent of the *Philadelphia Record*, writing from England: "The English are the best builders, I should say, in the world; they seem to like building; where we have a fence they have a wall; where we have a wooden jetty they have a stone pier; where we have a wooden sidewalk they have a granite pavement; we are in a hurry about everything, content with makeshifts; the English are never in a hurry, and they hate makeshifts. I reckon we lick the English in inventing things, saving labor, and in steamboats; and, except that I admire the little gardens to the humblest homes in England, I think Philadelphia can match the old country for homes; but, as I said before, solid is the word I should write down to describe England."

A Door That Cost \$28,000.

ONE of the finest works of art in Washington is the bronze door of the capitol, which fills the doorway leading from the portico into the rotunda. It was modeled in Rome in 1858 by Randolph Rogers, and cast in bronze at Munich in 1860 by F. Von Miller, at a total cost of \$28,000. The valves of the door stand in a superbly enriched casing, also of bronze, and fold back into suitably fitted jams. In height it is nineteen feet, and nine feet wide, weighing 20,000 pounds. In 1862 this door stood in the south doorway of the old hall of representatives. In 1871 it was removed to its present situation, which is more appropriate, as it is now the front door of the capitol, and can be easily examined by strangers. Each wing of the door has four large panels, and eight smaller ones. The events portrayed in the larger panels constitute *alto relievo* the principal events in the life

of Columbus and the discovery of America, while in the sixteen smaller ones are beautiful statuettes of his patrons and eminent contemporaries. On the key of the arch is an excellent head of Columbus. In the casing are four typical statuettes, representing Asia, Africa, Europe, and America, while between the panels is a series of heads representing the historians of the life and voyages of Columbus and his followers, among them Washington Irving and W. H. Prescott.—*The Builder*.

Black Walnut Worth One Dozen Farms.

"If the original forests of the States of Indiana and Ohio were standing to-day," says a lumber buyer, "their valuation would be many times greater than are the farms which they were sacrificed to improve. In making their farms the settlers in those States destroyed millions and millions of dollars' worth of black walnut. Miles and miles of fence are laid with black walnut rails. One old farmer says that only thirty years ago he began making his farm, and that he had worked eight years in clearing it of the walnut timber, eight acres of which he burnt up. After thirty years of cultivation the farm is worth \$8,000. If it had its walnut timber back it would be worth more than \$100,000." *The Gazette* has several times referred to the tremendous destruction of timber which has been wrought by the hands of the farmers of the country, but regrets will not bring back the valuable stuff which has been reduced to ashes upon myriads of logging heaps. It is a case of cannot eat your cake and keep it. We cannot have improved farms and valuable timber tracts upon the same land.—*Lumberman's Gazette*.

September opened with a brisk trade in all the leading branches of manufactured goods, and the outlook is promising for the best fall business we have had for several years. Compared with the opening of September last year, there is a marked change. Then there was a halting, weak tone, and stocks of most wares were largely in excess of the demand; factories and workshops were stopping in all directions, and large numbers of people were out of employment in all the manufacturing towns. Now buyers are operating with confidence, prices of goods are advancing, and stocks have disappeared. In many instances the factories are behind their orders and some idle machinery has been started up. Fewer people in the manufacturing towns are idle for want of employment, and in some towns everybody that wants work can get it. The despondent tone has given way to a cheerful, hopeful spirit, and all are now confident that good times are coming. A glance at our reports will show that there is a solid foundation of facts for these statements.—*Brick, Tile, and Metal Review*.

Treads and Risers.....	\$.50
Stair Building Made Easy	1.00
Art and Science of Stair Building	1.00
Architectural Perspective.....	3.50

The Annual Architectural Gatherings.

THE American Institute of Architects will meet in annual session, October 21, 1885, at Nashville, Tenn. It is to be regretted that California and the Pacific States and Territories—particularly San Francisco—fail to furnish a single representative in that body, although the place of meeting has been made to some extent central, and so as to accommodate distances and equalize conveniences.

True, there are but a few of the many scores of architects practicing on this coast, entitled to a seat and active voting participation in the proceedings of the parent body; but it is very certain that any intelligent representative member of the profession being present, would be well received and entertained. The brethren East would gladly extend courtesies, and make the visit of parties representing this side of the continent exceedingly pleasant.

San Francisco Chapter should take this matter in hand, and at an early day arrange for a representation at the session of 1886. This extreme western branch of the profession has remained sufficiently long encased in its isolation. For many years the bar to comingling with the eastern sections of the country, was to a certain extent enforced by difficulty of transit and communication; but this has long since been removed, and the present facilities, conveniences, and speed of travel, render a trip East a matter of small moment. And if the Chapter should delegate representatives, it would be entitled to all the benefits arising therefrom, and at the same time strengthen the position of the party or parties representing

THE WESTERN ASSOCIATION OF ARCHITECTS.

This body also holds its session, October 18, at St. Louis. Great interest is manifest, and it is to be expected that a spirited and interested time will be enjoyed. Invitations have been extended to architects in California, and an earnest desire expressed to see a representation from this coast. The two conventions assembling about the same time—one on the 18th and the other on the 21st of the same month—will afford the opportunity to the delegates from each to mingle in the pleasures and profits of both, an opportunity that might have been made profitable to the profession in California had this city been present by representation.

Special Book Notices.

Cooper on the Use of Belting for the Transmission of Power, contains a large amount of practical and valuable information, with numerous illustrations. Its subject matter is treated intelligently, and with a clearness of comprehension that renders it a truly valuable book. Its matter covers 300 pages, 6x9, with ten pages of index additional. Thos. W. Hartley & Co., Phil., publishers' agents.

Grimshaw on Saws, with Supplement, by Robert Grimshaw. A book of 279 pages, neat and clear in typographical execution, and full of facts and figures in relation to saws. The number and variety of its illustrations add greatly to its interest. It contains a large amount of valuable information. Thos. W. Hartley & Son, publishers' agents.

A Manual of Industrial Drawings for Carpenters and Other Wood-workers, by W. F. Decker, instructor in drawings in the University of Minnesota. Published by W. F. Comstock, N. Y. Price, \$2.00. Sent by mail free of postage to any part of the world. To be had at the office of this Journal at publishers' price. An excellent, practical book.

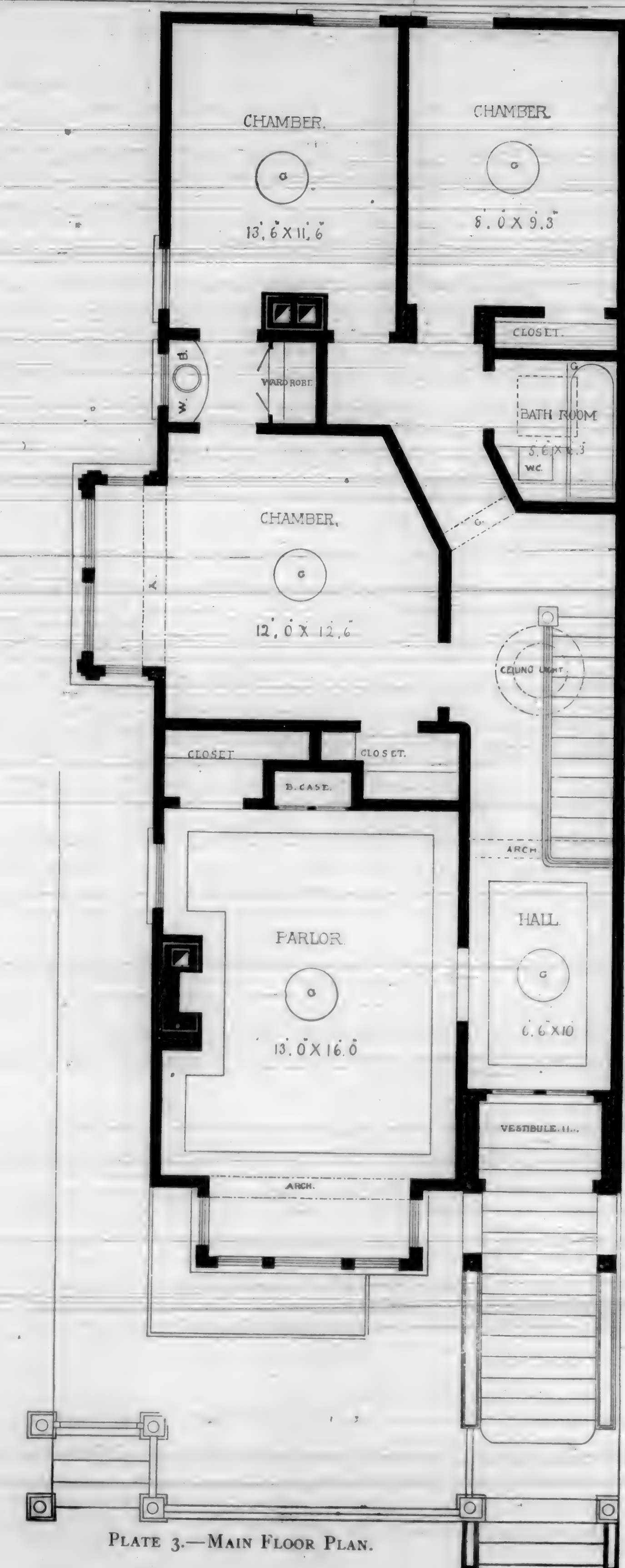


PLATE 3.—MAIN FLOOR PLAN.

Science of Architecture.

[Special for this Journal. By F. Hillert, Architect and Mechanical Engineer.]

(Continued.)

Two BODIES, M and N, each of a different temperature, are in contact with each other, the one M, the warmer, will transmit or pass heat to N, the colder, through the surface of contact, to be absorbed by N. If N is cut up in equal small slices parallel to F, the surface of contact, and in each of the slices exist a uniform temperature, but differing from each succeeding one, then the slices will the more apart, with a better conductivity of heat of the material. A motion of heat from M, the hotter body, through F towards N, will occur.

If the surface of a hot body emits or radiates heat to the surrounding colder medium, such emission is depending on the condition of the surface of the body.

By the emission or giving over of heat to a body, such may be done, by radiation or by conductivity (contact with the surrounding medium). Is named with:—

r, the heat given over by radiation per hour, and $\square$ meter (10.76 59. feet).

V, the heat given by conductivity per hour, and $\square$ meter.

T is the temperature of the surrounding medium.

t is the overplus of temperature of the emitting surface over the temperature of the medium.

k = a coefficient, depending on the condition of the surface of the body.

k₁ = a coefficient, depending on the shape and extension of the surface.

a = a constant = 1.0077.

b = constant = 1.233.

Then is:—

v = heat transmitted by radiation =

$$124.72k \times a^t(a^t - 1).$$

v₁ = heat transmitted by conductivity =

0.552 k₁ t₁, and the whole heat transmitted.

V = v + v₁ = 124.72ka^t(a^t - 1 + 0.552k₁ t₁).

Values of k for the coefficient of radiation:—

Polished silver.....0.13	Glass.....2.91
Silvered paper.....0.42	Pulverized chalk.....3.32
Polished brass.....0.258	Saw-dust.....3.53
Gilded paper.....0.23	Powdered coal.....3.42
Copper.....0.16	Fine sand.....3.62
Zinc.....0.24	Coat of oil paint.....3.71
Tin.....0.215	Paper.....3.77
Polished black sheet-iron.....0.45	Lamp-black.....4.01
Lead-sheet-iron.....0.65	Buildingstone.....3.60
Common sheet-iron.....2.77	Gypsum.....3.60
Roasted sheet-iron.....3.36	Wood.....3.60
New raw iron.....3.17	Woolen stuff.....3.68
Roasted ".....3.36	Calico.....3.65
	Silk stuff.....3.71
	Water.....5.31
	Oil.....7.24

k₁ is depending on the form and extension, and is:—

For a sphere of the radius r, k₁ = 1.778 + $\frac{0.13}{r}$

For a sphere, k₁ = 1.778 + $\frac{0.13}{r}$ of radius r = r.

For a horizontal round cylinder of radius r, k₁ = 2.058 + $\frac{0.0392}{r}$

For a vertical cylinder of radius r and the height h,

$$k_1 = \left\{ 0.726 + \frac{0.0845}{\sqrt{r}} \right\} \times \left\{ 2.43 + \frac{0.8768}{\sqrt{h}} \right\}$$

From the following table the values of v and v₁ for the different overpluses of temperature (t) can be computed, where by T is taken = 15°.

Ts T = 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 deg. then the following figures in the table must be multiplied with

0.89 | 0.96 | 1.04 | 1.12 | 1.21 | 1.31 | 1.41 | 1.52 | 1.65 | 1.78 | 1.92

Overplus of temperature (t), degrees.	Transmission by Radiation.	Conductivity.	Overplus of temperature (t), degrees.	Transmission by Radiation.	Conductivity.
10	11.2k	9.4k ₁	40	269.5k	244.3k ₁
20	23.2k	22.2k ₁	50	302.1k	266.1k ₁
30	36.1k	36.6k ₁	160	339.0k	288.1k ₁
40	50.1k	52.2k ₁	170	277.4k	210.5k ₁
50	65.3k	68.6k ₁	180	418.5k	333.2k ₁
60	81.7k	86.0k ₁	190	463.2k	356.1k ₁
70	99.3k	104.0k ₁	200	411.2k	379.4k ₁
80	118.5k	122.6k ₁	210	563.1k	402.9k ₁
90	138.7k	141.7k ₁	220	619.0k	426.7k ₁
100	161.3k	161.5k ₁	230	679.5k	450.7k ₁
110	185.3k	181.5k ₁			
120	211.3k	202.1k ₁	240	744.8k	475.0k ₁
130	239.3k	223.1k ₁	250	848.7k	498.6k ₁

For the transmission of heat, those cases are most important where two parallel equal distanced surfaces are surrounded and in contact by mediums of a different temperature, where the overplus of heat of the one medium transmits heat to the other through the separating body. The transmitted quantity of heat M must be equal to the heat transmitted to the medium facing the colder surface.

If we name

e, the thickness of the transmitting body, the distance between the absorbing and emitting surface.

t, the temperature of the heat-emitting medium = to the heat-absorbing surface.

t', the temperature of the heat-emitting surface.

t'', the temperature of the heat-receiving medium.

C, a coefficient, depending on the capacity of the body to conduct heat,

Then is:

$$M = \frac{C(t-t')}{e} \text{ wherein}$$

$$C = e(k + k_1) \frac{(t' - t'')}{t - t'}$$

Table for the values of C of the different bodies pro 1 boner 1 sq. meter = 10.76 ft. 59 e = 1 meter, 3.28 ft. (t - t') = 1°

Gold.....77.	Cork.....0.143
Platinum.....75.	Caoutchouc.....0.170
Silver.....74.	Guttapercha.....0.173
Copper.....69.	Starch paste.....0.425
Iron.....28.	Glass.....0.75-0.88
Zinc.....28.	Quartz sand.....0.27
Tin.....22.	Broken brick coarse.....0.139
Lead.....14.	Broken brick fine.....0.165
Graphite fr'm gas retorts.....4.96	Dry washed chalk.....0.086
Fine-grain marble.....3.48	Dry washed chalk, pressed.....0.103
White coarse marble.....2.78	Flour from potatoes.....0.098
Fine-grain limestone.....1.70-2.08	Wood ashes.....0.060

Common mixed gypsum.....0.331	Saw-dust.....0.065
Gypsum mixed with alum.....0.63	Charcoal powder.....0.079
Burnt clay 0.51-0.63	Coke.....0.160
Pine cross-grain 0.093	Iron filing.....0.158
parallel fiber.....0.170	Cotton.....0.040
Walnut cross-gr. parallel fiber.....0.174	Carded wool.....0.044
Oak cross-grain 0.211	Elderdown.....0.039
	Linen.....0.043-0.052
	White writing paper.....0.043
	Gray printing paper.....0.034

A body, composed of many layers of thicknesses, e, e', e'', and the conducting capacity C, C', C'', will have

$$M = \frac{t-t''}{\frac{e}{C} + \frac{e'}{C'} + \frac{e''}{C''}}$$

A scrutiny of the radiating and conducting capacity of the different bodies, as solid or in a pulverized state, shows a large difference, the movements of the heat being retarded by the air between the small particles.

A conservatory of 1 sq. meter surface of glass, the outside temperature being 20°, the required inside temperature being 40, the whole heat emitted by radiation and conductivity is

Q = v + v₁; v = 23.2 × 2.91 × 1.04 = 70.21.
v₁ = 22.2 × 0.88 × 1.04 × 20° = 40.62.
Q = v + v₁ = 110.83 caloric per hour and square meter, or 10.76 square feet.

HEATING AND VENTILATION.

The quantity of heat acquired pro unit of time (one hour) to warm a room is depending on the capacity of transmitting heat, viz., on the kind and thickness of the surrounding wall inclosing the room (walls, windows, doors, floor, and ceiling), and the difference between the temperature wanted in the room and the temperature existing outside of the inclosing wall.

For the most important instances for practical application, the needed amount of transmitting heat can be calculated by the following rules. The terms therein given are:—

M = to the number of units for heat (caloric) which for every hour every square meter = 10.76 sq. feet through a body with parallel sides (wall, plate) are transmitted.

C, the coefficient of the conducting capacity of the material.

k, a coefficient depending on the condition of the surface.

k', a coefficient depending on the form and extension of the body; the sum of k + k' = Q.

T, the temperature in centidegrees desired in the room to be warmed.

t, the temperature the transmitting body is exposed to on the outside.

e, e', e'', the thickness of the parallel stratas the transmitting body is made off, measured from the heat-receiving strata to the heat-distributing surface of each strata.

1. Transmission of heat through the walls or doors of a room, when all the walls are not exposed to the outside air.

$$M = \frac{C, Q(T-t)}{2C + Qe}$$

2. Transmission of heat through single windows, not all of them being exposed to the outside air.

$$M = \frac{Q(T-t)}{2}$$

3. Transmission of heat through plain glass walls, all of them being exposed to the outside air.

$$M = \frac{Q k_1 (T-t)}{Q + k_1}$$

4. Transmission of heat through double sash windows of a room, not all the walls containing them are exposed to the outside air.

$$M = \frac{Q(T-t)}{2+1}$$

5. Transmission of heat through the ceiling of a room—

$$M = 2 + \frac{Q(T-t)}{\left(\frac{1}{Q} + \frac{e}{C} + \frac{e'}{C'} + \frac{e''}{C''} \right)}$$

By inserting the values before given for the radiating or conducting coefficients, and for a difference of temperature (T - t) = 1, we obtain by these formulas the following figures:—

For 1; a, for a brick wall.

Thickness of Wall, m. or feet.	Transmission Value, M.
0.125 (5")	1.80 cal.
0.25 (10")	1.20 cal.
0.38 (15")	1.04 cal.
0.51 (20")	0.86 cal.
0.64 (25")	0.73 cal.
0.77 (30")	0.63 cal.
0.91 (35")	0.55 cal.
1.04 (41")	0.49 cal.

B, for wood in doors.

Material.	Height of Door.	Thickness of Door.	Transmission Value, M.
Pine	3m (9'10")	0.040m (1 1/2")	0.050 (2")
Oak	3m (9'10")	2.55 cal.	2.50 cal.
		2.72 cal.	2.49 cal.

Ad 2, for single windows.

Height of Windows.	Transmission.
2m (6'6")	2.56 cal.
3m (9'10")	2.52 cal.
4m (13'1")	2.50 cal.
5m (16'4")	2.49 cal.

Ad 3, for glass walls.

Height Glass Walls.	Transmission.
2m (6'6")	1.54 cal.
3m (9'10")	1.49 cal.
4m (13'1")	1.47 cal.
5m (16'4")	1.45 cal.

Ad 4, for double sash windows.

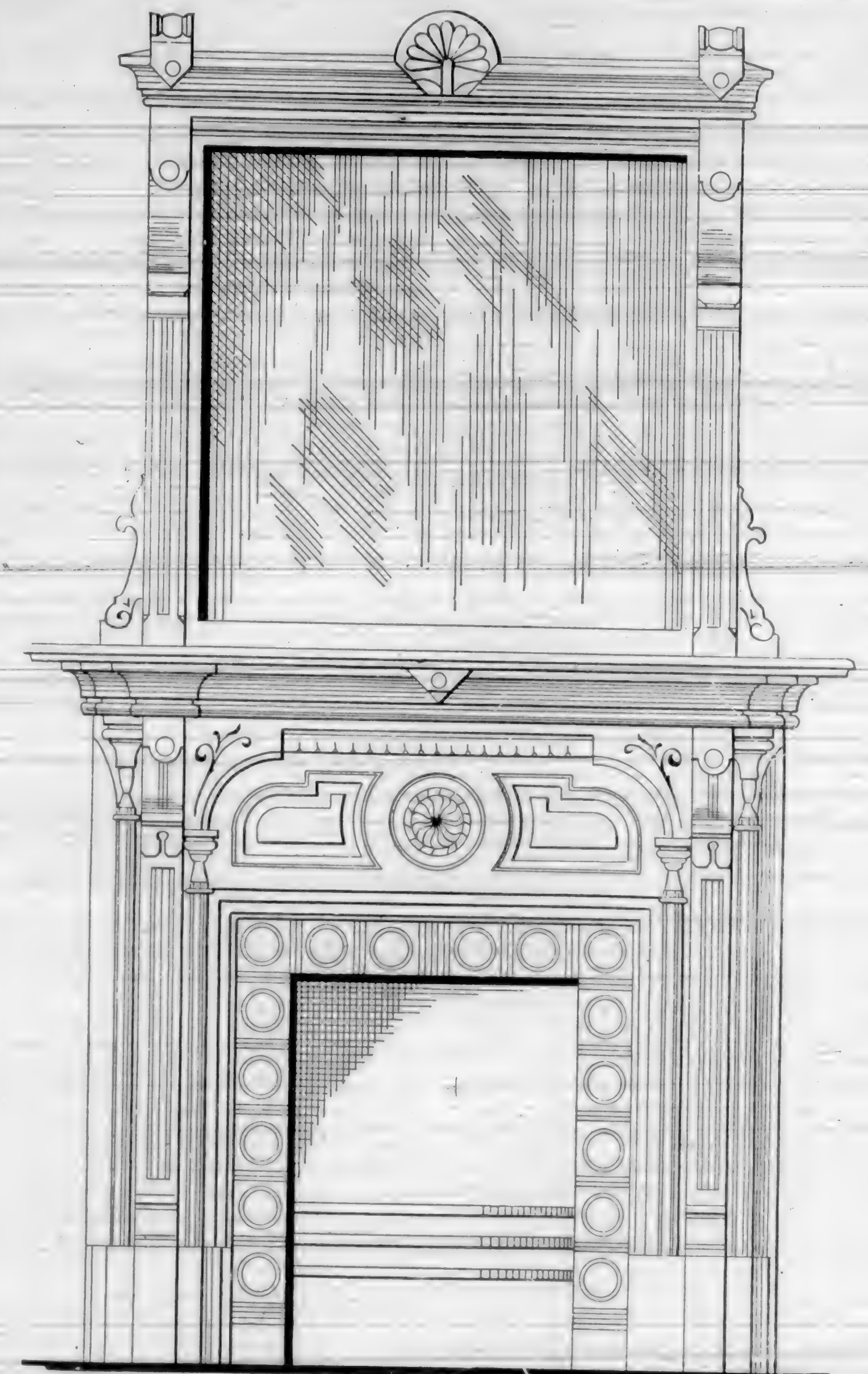
Height of Windows.	Transmission.
2m (6'6")	1.70 cal.
3m (9'10")	1.68 cal.
4m (13'1")	1.66 cal.
5m (16'4")	1.65 cal.

Ad 5, for ceiling.

For a ceiling of 0.3m (11.81") thickness we find the value of transmission 0.5 cal.

The above formulas and the values calculated, with their assistance, must practically be applied with some allowance and consideration, since the conditions under which those formulas were made can't exist in reality.

For example, the transmission is considerably influenced by the position of the transmitting body towards the quarter of heavens, through rain, wind, state of moisture of the atmosphere, the air, sunshine, by the special quantities of the material and the quality of work executed, etc. The given formulas are only guilty for a state of continuation and uninterrupted use, which in reality is seldom the case. For a room seldom heated and only used for a short period, the calculation for a heating apparatus for the heat needed hourly, the question in the first



DESIGN FOR LOW CAST MANTEL.

place is, not as much the transmission of heat as the absorption of the same by the walls (churches, halls, etc.), to be considered.

To have, under the common conditions, a support for the approximate calculation of the losses of heat, it will be well to increase the values obtained by the formulas; for room facing north and east, by 10 per cent, and multiply all values of M with respectively:

1.1 when the heating is carried on uninterrupted.

1.2 when the heating is carried on during daytime, and the building having no sheltered position.

1.3-1.4 when the heating is carried on during daytime, and the building having a much exposed position.

1.8-2.00 when the room is only periodically heated.

From the above calculated amount of heat can, when the room is occupied by a certain number of persons stopping in it constantly, or for a longer time, that quantity of heat be deducted created by them, and for which we can allow 130 cal. of heat for a grown person per hour, and 70 cal. for a child.

Suitable temperatures T for room to be heated, are:—

For heating rooms, halls, theaters, etc.	16°-18° cal.
Living rooms	18°-20° "
Bedrooms	15°-16° "
Stair corridors	12°-15° "
Hot-houses } warm	20°-24° "
} cold	10°-14° "
Hospitals	20°-22° "
Prisons	16°-18° "
Workshops	10°-12° "

For t, the temperature of the outside atmospheric air, we have to consider the climatic condition of the country, since the heating arrangement must fulfill its functions with safety under all conditions.

FUEL.

Of the three kinds of fuel, the solid, fluid, and the gaseous, the solid is by far the most in use, inasmuch as late attempts to introduce the gaseous were, so far, not successful.

As stated before, and in connection with the application to be repeated, hydrogen and carbon are the heat-producing elements of the fuel, which, by perfect combination or oxidation, taking the required oxygen from the air, are reduced to water and carbonic acid, but by imperfect combustion, under considerable loss of heat, are reduced to oxide of carbon, olefiant, and water; both instances leaving ashes as residue from the incombustible inorganic substances of the fuel.

The Master Painters.

THE regular monthly meeting of the master painters was held on the 6th inst., Mr. E. M. Gallager occupying the chair. The aims and objects of this organization are to protect mutual interests, and remedy existing evils in the painting art; and, as far as possible, purge it of the influences which have rendered it next to impossible for thoroughly competent and trustworthy men to secure work at prices sufficient to enable them to pay for the stock used and the labor employed.

There is no question but that there are some terrible frauds in the painting business, who manage to manipulate compounds bearing but the semblance of genuine lead and oil paint, and who "play it on owners" to a disgraceful extent. The report of proceedings states: "It has been one of the crying evils, for many years, that property owners have sought in vain for protection against the use of vile materials. Hundreds of private dwellings in this city are to-day blistered and cracked from the use of inferior stock—notably one on Nob Hill, which is in a wretched condition, and is being overhauled."

This outcry against the "slop shop workers" is all very well and right, as against the *bas tard* painters, but owners are also to blame—inasmuch as they, as a rule, are willing that every fellow who calls himself a painter, although in very fact the merest dauber, should compete with competent men; and they—possessing neither the integrity nor the ability to do good work, figuring below all reasonable and right values in eight out of ten cases—so far underbid the good men (often to the extent of fifty to one hundred per cent),

that the amount seemingly saved to the owner dazes his better judgment, and he submits to the chances, both as to materials and workmanship.

This mistaken course on the part of owners is damaging alike to themselves and qualified mechanics; to themselves in that they pay money for a worse than worthless something—a something that has neither merit nor value, and which, when used, becomes a continuous annoyance and vexation. For when a man realizes that he is the martyr of a bad job of painting, it is impossible for him to reconcile himself to the fact, excuse it, and be satisfied with it. It haunts him ever, and he cannot forget one of two things: either, "What a fool I was to give the job to that man;" or, "That rascally painter swindled me badly," neither of which propositions are pleasant reflections.

If owners would exercise better judgment, and a little more liberality, they would secure better work. But unfortunately, as a rule, when the contrast is presented of \$675 or \$902, as against \$1,075 or \$1,680 respectively, the difference has a powerful effect and influences in determining issues, and qualifying preconceived purposes and resolutions not to contract with nor employ any but first-class painters.

The objects of the organization are, however, to be commended, in that it is seeking to correct a great wrong and evil existing in the painting business, and to stimulate integrity and correct dealings in the use of materials and otherwise, and inspire ambitions among its members to learn and know what is best to do, and how to do it, and to exercise that knowledge rightly, honestly, and faithfully in every transaction.

It is to be hoped that the better men will consolidate determinations and efforts, and work unitedly as against the manipulations of slush and fraudulent compounds, by the use of which they gain an advantage in figuring over men who have "learned the trade," and who are unwilling to disgrace themselves and the pursuit of their choosing by resorting to any of the numerous dishonest and un-mechanical devices by and through which the "cheap" operators obtain a large proportion of the contract work let in San Francisco.

Figures in Wood by Compression.

A NEW process has been invented by which designs in wood, having all the appearance of genuine carving, and being if anything of a finer finish, are produced by compression, and can be sold at a nominal price. The process consists in paring hard-wood shavings as thin as wafers, which are then placed in a chemical solution. When in a properly pliable condition, the mass is introduced into moulds made from steel plates, and pressure is applied, which forces the wood pulp in every line of the mould. When it becomes dry, it is removed from the mould, and has exactly the appearance of a wood carving, with the grain of the wood as perfect as though it had never

been reduced to a pliant condition. The process is a German invention, and large numbers of different designs are now being manufactured in Berlin. These are in form of heads, figures of men, women, birds and animals, flowers, picture and mirror frames, clock frames, cabinets and cabinet decorations, album covers, etc. Beautiful designs are framed in brass, bronze, and plush, and make exquisite plaques and parlor ornaments. The designs can be used in every form of decoration for which wood carving is suitable.—*Furniture Worker.*

When the architects and builders of churches learn that ventilation does not consist in a draught of cold air, and that something more is necessary in a crowded building than an open door or window, one very great danger to health will be removed. This subject of ventilation has received much practical attention of late, in which the churches seem to have been largely left out of the account. An open door, or window, in such a building usually means a current of cold air, which must inevitably blow directly on the necks and shoulders of many people, at least one-half of whom will either take cold or suffer twinges of rheumatism or neuralgia in consequence. Very few people, even in robust health, can sit in a draught without uncomfortable consequences, and delicate people more frequently "tempt Providence," as the saying goes, by sitting in a church where some zealous lover of fresh air throws open a door or lowers the upper sash of a window without a thought of the consequences, than they would by staying at home. The writer attended a church last Sunday, where study and expense had not been spared in the interior decoration. The olives and blues, brightened with a touch of gold on wall and vaulted ceiling, were soft and restful to the eye. The seats were comfortable, the organ and choir satisfactory. But when the air grew heavy, and people moved about uneasily to keep themselves from drowsiness, one looked in vain for some adequate means for supplying freshness and life to the tainted air. At last, somebody opened a door at the back of the church, and there was no lack of fresh air, only it struck the heads and shoulders of every one in its path and effectually distracted attention from the sermon. People moved more uneasily than before, and no one had a monopoly of stinging neuralgic pains in back and shoulders for the rest of the day. If this were an exceptional case it would be of comparatively little importance, but it is so common a thing that it demands attention and remedy. If it is wrong to place one's self voluntarily in a position where health and, often, life are in danger, it is manifestly far more reprehensible to construct a church building, where people will go and ought to go, without proper thought or knowledge of this important matter. Clergymen will find their work very greatly advanced, and some of the stumbling blocks of coldness and indifference speedily removed, when pure air is properly and constantly furnished to their hearers without danger to health and comfort.—*Sanitary News.*

The London Tower.

IN the future, it would seem, the Tower is to be, even more than in the past, one of "the sights of London." It is to be divested entirely of its utilitarian chapter. The rifles in the Armory are to remain, but the whole of the large store of arms is to be removed to the central depot at Weedon. This, we are told, is in fulfillment of a desire that the Prince Consort had very much at heart—a desire that the Tower should be preserved wholly and simply as a building remarkable for its architecture and for its historical associations. In accordance with this view, the barrack and hospital stores were removed in 1869, and the accoutrements a few years after. The workmen, of course, went also, and now the building will be deserted, so far as permanent tenants are concerned, by all save the small garrison which has always been maintained there. The arrangement will probably meet with general approval. It is, perhaps, as well to separate in this case the practical and the sentimental elements. The maintenance of the useful functions of the Tower means, of necessity, wear and tear, to which it is, no doubt, desirable that the building should no longer be subjected. There is very much to be said for keeping such famous old places as the Tower in as perfect a state of preservation as possible. We can find plenty of localities for the storage of arms, but we cannot adequately repair any damage which may be done to our ancient historical landmarks. We can "restore" them in one sense, but not in another.—*London Globe.*

The Russian Admiralty has ordered that twelve gunboats shall be immediately provided with furnaces for burning mineral oil instead of coal. The substitution of petroleum for coal for steamships is progressing rapidly. Already there are upward of three hundred steamers burning this liquid fuel, and their number is being added to almost daily. This is a matter that must even now affect the coal trade in an appreciable degree. It is reported that the owners of an important line of steamers from England to Australia are likely to adopt oil furnaces shortly. The space occupied by the oil for a given effect is scarcely more than half that required for coal, an advantage of great importance in long voyages. The oil can be taken in, too, in much less time than coal. Hitherto no accident has occurred with this fuel.

A sudden rise in the Snohomish River, W. T., lately, broke the Pilchuck boom and let loose 1,500,000 feet of logs. The whole lot went out to sea. About 1,000,000 feet were saved and turned into Ebey Slough, 100,000 feet going out on ebb tide and drifting into Port Susan Bay. Through the breaking of other booms it was thought that not less than 2,000,000 feet of logs went out to sea, about three-fourths of which were saved.

Cumming's Details.....\$6.00
Cutting Tools.....1.50

Sewerage—Berlin.

SOME idea of the effect which the inauguration of a system of sewerage has upon the sickness-rate of typhoid fever may be gained by studying the results already attained in Berlin. Durand-Claye has recently published a description of the new system, in which he touches upon its effects upon the health statistics. It may be stated that the system has been put in so far, in the most crowded sections of the city, leaving the more open suburban portions of the town still unimproved in this regard. It may also be stated that Berlin is eminently a city of apartments and tenements. The average number of people living in one house in Berlin is fifty-eight. In the suburbs, of course, the number is much less than that. The number of cases of typhoid fever in a stated time, in that part of the city where the sewerage is not yet put in, was one to each nine and three-tenths houses, while in the sewered portion in the same time, there was but one case to each forty-nine and three-tenths houses. The deaths from the disease bear out the conclusions derived from the sickness reports. In the unsewered portions of the city the deaths were one to each forty-three houses, while in the sewered portion the deaths were one to each one hundred and thirty-seven and five-tenths houses.—*Sanitary News.*

The fire waste in this country for the past few years is something fearful to contemplate. Probably few persons stop to consider what this amounts to in the aggregate, and few, comparatively, are aware that over \$100,000,000 worth of property is sacrificed to the fire fiend every year in this country. This is equivalent to the annihilation of so much in actual values, which are taken, directly or indirectly, from the pockets of the people, either in premiums to the insurance companies, or in taxes to support fire departments. And the worst feature of it all is that the greater portion of this loss is wholly preventable. The poor character of buildings, carelessness on the part of owners or occupants, or want of adequate protection, are among the causes which lead to many of the disastrous conflagrations. In Philadelphia the underwriters have determined upon the selection of approved experts who are to visit properties and require improvements, and make re-examinations every six months.—*The Indicator.*

It is stated that the work on the new State House at Austin, Texas, will progress rapidly after Jan. 1. The foundations and basement are now completed, and a new railroad fourteen miles long has just been built to connect the site of the capital with the quarries from which the granite to be used hereafter in the construction of the building is to be procured. Contracts for iron and other building material have not yet been closed.

Builders' Guide.....\$2.00
Album of Mantels.....8.00

Taxes and Manufacturers.

THE prodigal waste of money raised by taxation in large towns and cities frequently has a depressing effect on manufactures. In many cities there appears to be a regular increase in tax rates, which is likely to stop no one knows where. Such a state of affairs prevents the location of manufacturers, for the sufficient reason that they cannot compete, under the load of taxes imposed, with those more favorably situated in this respect. This is something never considered so fully as it should be; it is a strong plea for honesty and business principles in the expenditure of money raised by taxation. Nothing places a town or city in better condition to meet necessary taxation than the presence of large manufactories, distributing money to a large number of workmen.

In some of our Northern and Eastern cities the tax rate is three per cent, and increasing year by year. It cannot be expected that manufacturers will be anxious to establish themselves where they will be burdened, or overwhelmed, with such a load; on the contrary, those already there will be likely to consider the propriety of moving elsewhere in self-defense. Other towns and cities, alive to the advantages, offer to abate taxes altogether for a term of years; with honest and business-like methods of officials, we do not believe there would be any need of resorting to this last-named expedient, the justice of which is, to say the least, questionable. Manufacturers do not object to bearing their share of public burdens, but they do object to taxation about equal to profits they would be satisfied with. In such times as we have been passing through, this burdensome taxation is, in many instances, where business has been done at little or no profit, unbearable. We commend this view of the case to the law-makers. In too many instances they seem to lose sight of the fact that, when they succeed in driving away manufacturing, they will not find it easy to raise even the money required for the honest administration of affairs.—*American Machinist.*

Old Files That Look New.

ACCORDING to the *Sun*, the Kearney & Foote Company, one of the largest manufacturers of files in the country, have lately received complaints of worthless goods bearing their trademarks. Recently one of their agents learned that a Jersey City dealer had had an offer of a large lot of files at remarkably low figures. The would-be seller represented that he had secured a supply of files at a sale of unclaimed express packages. An arrangement was effected which secured the presence of a detective, when two men called at the dealers and effected a sale.

Receipted bills showed that the sellers had purchased large quantities of scrap files from the Singer Manufacturing Company. An acid process gave the worn-out files a new appearance. A trial showed they would hardly cut lead, the acid having ruined their temper.

Sacramento—Eighteenth Street, bet. Land J. Two-story frame. O. E. C. Atkinson; A. A. A. Cook; C. Ruggles & Wendt; \$2,500. Third Street, bet. I and J. Two-story frame. O. D. Mason; A. A. A. Cook; C. Dean & Bolin; \$5,000.

Red Bluff—Cor. Main and Walnut Streets. Two-story brick. O. Cone & Kimball; A. A. A. Cook; C. Swain & Hudson; \$32,000.

Piedmont—O. Mrs. C. A. Kohler; A. S. & J. C. Newson; C. W. P. Wettenose; \$2,000.

Daguerre—Residence. O. A. H. Koebig; A. Geo. E. Voelkel; day's work; \$3,000. Residence. O. Judge Perkins; A. Geo. E. Voelkel; \$4,000.

Santa Cruz—Brick church. O. Catholic Church parish; A. T. J. Welch; \$25,000.

San Rafael—School-house. O. San Rafael County; A. Curlett & Githenston; C. D. Perry, carpenter; C. Ferris, stone work; \$2,000.

Alameda—Santa Clara Ave., corner Verdy Street. Three two-story frames. O. J. Hesse; A. Geo. E. Voelkel; day's work; \$6,000. Newton, cor. Santa Clara Ave. Three two-story frames. O. F. L. Perkins; C. E. W. Lewis; \$10,000.

West Berkeley—One-story frame. O. F. Schrader; A. W. Schrod; C. C. Lutz; \$1,500.

East Oakland—Two one-story frames. O. J. Slattery; A. J. & E. D. Newson; C. W. Herin; \$3,800. Eleventh Street. Two one-story frames. O. W. R. chardson; A. J. J. & T. D. Newson; C. C. Wilkins; \$3,000. Twelfth, cor. Ninth Ave. One-story frame. O. E. Tichener; A. J. J. and T. D. Newson; C. H. Brown; \$2,000.

Oakland—Washington, near Seventh. O. S. Hancock; A. J. Macquis; day's work; \$30,000.

Nevada City—One and one-half story frame. O. Mrs. Cross; A. S. & J. C. Newson; \$8,500.

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The California Architect and Building News.

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MISCELLANEOUS.

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itary Cause of Action; Magnificent Timber Region;
More Lost Arts than Fresh Discoveries; Licorice
Cultivation; Arrest of Architects; Revival of
Trade; How to Decorate; The Better Bridges; An
English Plan of Ventilation; A Rapidly Growing
Health Evil; Rosewood; Unfair Treatment of Con-
tractors; A New Phase in the Chinese Question;
Healthful Height of Stories; Staining Wood.

Building Report.

THE current month, ending the 10th inst., shows a marked decline in the number of new building engagements, and a diminished sum of costs. This is not to be wondered at, for the two prominent reasons: First, the "wet season" is upon us, and, as has been the case in all preceding years, serves as a damper in checking building activities. Secondly, the "boom in building" has been such that a continuance at the high pressure reached during the season could not be kept up under any natural, reasonable state of things. It would require increase in population of large proportion to sustain the activities of preceding months. Still the showing is good for the season.

NOTE.—The reports appearing in this Journal are as near the SOLID and RELIABLE facts as care in collecting, and truthfulness in stating, can make them. If we were to pick up every side-walk or other small job of \$150 or \$350, and report them from three to five times the amount of actual cost, and republish items of building news reported three or four months previous, it would alike swell the apparent number of improvements and outlays in buildings. But our object is to confine ourselves to the strict order and condition of facts as they exist, deeming it a wrong to bolster up, or make appear, that which does not appear in fact. The future of the great city of San Francisco is sufficiently well assured to need no fictitious additions to the actualities that exist.

The number of buildings for the current month, ending November 10:—

85 new frames, total cost.....	\$286,550
19 additions and alterations.....	41,150
3 brick structures.....	38,000

107 engagements. Total cost....\$365,700
Although this is a greatly diminished showing as compared with preceding months of current year, it is not so reviewed with the same month's report in 1884, which gave the total number of buildings at 101, and the total cost at \$418,226.

(See Building Intelligence for itemized report.)

Compressed Timber.

A NEW process for toughening timber is announced, by which it is claimed that white-wood can be made so tough as to require a cold-chisel to split it. This result is reached by steaming the timber and submitting it to end pressure, technically "upsetting" it, thus compressing the cells and fibers into one compact mass. It is the opinion of those who have experimented with the process that wood can be compressed 75 per cent, and that some timber which is now considered unfit for use in such work as carriage building could be made valuable by this means; and more especially since the rapid consumption of our best ash and hickory will sooner or later render some substitute necessary.

Oakland Report.

FROM this on, a carefully prepared report of building intelligence in Oakland, Alameda, and Berkeley will appear in each issue. To do this with accuracy, it will be necessary for the architects, owners, contractors, and others interested, to render us the little assistance required in furnishing figures and facts. It is to be regretted that architects of surly, vinegary disposition sometimes act as meanly as men can possibly act, just to gratify some morbid disposition of mind or stomach, refusing to give decent if any reply to questions which, if answered, would hurt no one, and be of interest to many. If an owner has a house built he cannot hide the fact, and should not wish to if the transaction is legitimate; and an architect can have no intelligent and proper excuse for withholding the facts in his charge, in so far as they apply to outward appearances—the improvement of real estate. The secrets of his profession and the private interests of his client should be respected; but outside of these—the erection of buildings in their very nature and surroundings, become matters of public interest.

Our gleanings for the present issue show:—
Oakland, 22 frame buildings, \$61,200
" 2 alterations..... 4,700—\$65,900
E. Oakland, 18 frame build'gs, \$43,700
" 2 alterations..... 10,500— 54,200
Alameda, 7 frame buildings, \$18,500
Berkeley, 4 " " " 7,400
N. Berkeley, Berryman tract
2 frame buildings..... 5,400— 31,300

Total reported from the Oakland side
of the bay.....\$151,400
(See Building Intelligence for itemized report.)

The work of sinking artesian wells in this valley is going on at a lively rate. There are now about forty in the valley, some of which are classed among the best on the continent. Two good augers are kept busy, each employing a force of hands. It is estimated that the average depth of these wells is about 150 feet. Their water is pure, deliciously cool and invigorating.—San Jacinto Register.

Don't Fail to Write.

SHOULD this paper be received by any subscriber who does not want it, or beyond the time he intends to pay for it, let him not fail to write us direct to stop it. A postal card (costing him one cent only) will suffice. We will not knowingly send the paper to any one who does not wish it, but if it is continued, through the failure of the subscriber to notify us to discontinue it, or some irresponsible party requested to stop it, we shall positively demand payment for the time it is sent.

Postal Grievances.

THE discriminations in the postal law of the United States, operating against monthly, bi and tri weeklies, and quarterly journals and publications, and in favor of weekly issues, has long been a source of just and merited complaint. The arguments used in support of this inequality of privileges are not sound nor good, and partake largely of special legislation; as well as an arbitrary ruling by the law-making body as to the status of the publications of the day; for if it were a fact that weeklies contain the bulk of all valuable information published, then they, more than any others, should be patronized.

But even were this true, still the discrimination would be unjust, in that it helps and protects one class or denomination of producers, as against others producing exactly the same thing in texture, bulk, and general character, the time of production alone being the difference. If the benefits of this special protection accrued to the consumer, —the hundreds of thousands who read the various publications,—there would be greater plausibility in the sophistical argument used; but such is not the case, particularly at the present time, as no publisher would allow the circulation of his publication to suffer on the score of postal charges for delivery, whether requiring one cent per pound, with three to ten copies to each pound, as in the case of weeklies, or one or two cents postage each, as imposed upon all journals other than weeklies. The feeble protests of this journal against so transparent a wrong, began with its earliest issues, and we are glad that other journals, especially the *Art Age*, N. Y., are now moving in the matter, and demanding a fair and equal distribution of rights and privileges in the use of the mail facilities of the United States.

Snows East—Strawberries in California.

COLD weather, frosts, and snows have been reported from various sections of the continent east of the Sierras, in the month of October, making overcoats and warm clothing a necessity to personal comforts. But as these are of common occurrence, even that early in the season, there is nothing special in that state of things,—they being regularly repeated with each returning autumn season, and, therefore, a something to be looked for and expected. But they are strongly in contrast compared with conditions existing upon the Pacific Slope. Although November is upon us, there has not been so much as a nipping frost to harm, much less to destroy, anything that grows. Garden-grown strawberries are in fair supply in our markets; grapes of every variety and species are abundant; pears, apples, some peaches still, and almost every kind of summer vegetables and garden products crowd the stalls, shops, and places where such things are sold. The "rainy-season" period has arrived, and it is likely and hoped that the genial and copious showers will fall upon the earth, until it shall have drank up

or absorbed enough to supply moisture during and through the "dry season," to everything that grows; there may also be some few "cold snaps" of short duration, between now and April next, but none of that bitter kind—none that will sink the mercury within less than 30° above zero, and when so low as that, it will be severe for California.

Soon, with the falling of the early rains, verdure will everywhere begin to grow, and long before Christmas times come around, the hills and valleys of the Pacific Coast, over thousands of square miles, will be covered with beautiful grass; while in many parts east of the great divide, the frozen earth, with its mantles of snow, and the piercing cold winds, will hold back all growth, until stern winter shall have spent its fury, and the zephyrs of spring bid all nature arise and prepare for the harvest time.

Anti-Chinese Demonstration.

A MASS-MEETING of the people, mainly the working classes, but also considerably of the representative men of San Francisco, was held in Union Hall, on Saturday evening, October 31, 1885. The number present and astir on the occasion was not less than ten thousand, with fully two hundred and fifty thousand others in the city in full sympathy with the movement. While the proceedings were of the most orderly and quiet character there was an intensity of earnestness and interest manifested upon every countenance, but little if any less than that which animated the patriots and soldiers who rushed to the fierce battle fields in defense of the flag of our common country. For this too was a demonstration against an enemy of the worst kind; an insidious and relentless foe, in certain regards much more to be dreaded than the bold and daring men of the South, most of whom, believing their cause to be just, braved the risks and dangers of the battle field and the perils and results of bloody war. But the enemies against whom battle is now waged have entered our cities and garrisoned themselves in our very midst, and so surrounded themselves with the strong bulwarks of manufacturing, mechanical, trade, commercial, financial, and other defenses, that unless outgeneraled or circumvented; or by wise, strong, decisive and effectual legislation thwarted, they will complete and make general their monopoly of all the smaller and at present less important branches of industry, precursory to the grand swoop that in due time will be made upon every vital interest of the country. Demonstrations such as that referred to in this article, are both justifiable, and an urgent necessity, not only in San Francisco, but in every part of the United States where white men are required to toil for bread: for it is but a matter of time when, if not effectually checked, Chinese will force themselves into every State, city, town, and hamlet over which the stars and stripes float, with the danger possible that the flag of our Union will be insulted, and that of the hideous dragon raised above it.

A Style in Decadence.

ONE of the strongest claims made in behalf of Queen Anne domestic architecture, which has come to mean anything that throws aside all the rules of symmetry, is that it gives more variety and character to city houses than was possessed by houses of the old style, that stood along the streets like regiments of drilled soldiers. Speaking upon this point a Pittsburgh exchange asserts that it may be questioned whether a hundred houses of the same type, but with a few variations of an extra gable or an overhanging porch, show more individuality than the uniformity of the mansards of a few years ago, or of the Gothic cottages of the last generation. In fact, the most thoroughly characteristic houses that exist in this country today are those of the early part of the century. There may not have been much æsthetic character in the solid, prim, Grecian mansions, of which we still have one or two noted types in our suburbs, but it was a solid and enduring character. Between the rank of some of these old mansions and some of the last vagaries of the architectural craze there is just about the same difference as between the strong individuality of Adams, Webster, and the men of that generation and those of the present day who spend their days in dilettante studies of art, or the worshiping of blue china. There are some specimens of the Neo-Renaissance architecture produced in the present era of construction that will always preserve their quaint beauty, but it will not be many years before the spawn of cheap monstrosities that now goes under the name of Queen Anne, will be seen to be as inartistic a conventionalism as any of its predecessors.—*Carpentry and Building.*

The general tone of Eastern journals is against the continuance of Queen Anne as a style of domestic architecture. The Eastern profligacies in peculiar deformities in house building, as compared with the idea of the science of architecture developing strength, symmetry, proportions, durability, etc., has been great. But if the minds that guide the pens that write words of disfavor toward that which they see and know at home, would but journey westward, and tarry a day or two in San Francisco, they would see enough frightful, tortuous, barbarous, hideous transgressions of true architectural skill to set them mad with rage, or make them laugh until aching sides would demand restoratives, or the services of a medical man.

QUEEN ANNE AND EASTLAKE.

The old lady has been tortured some, but poor Eastlake, how he is to be pitied, having been made the scape-goat for ten thousand sins, monstrosities and abuses of taste and architectural deficiencies, committed by a class of aspirants who would never have been known as practical architects, except by producing all manner of funny things—things outside of all architectural rules and teachings, and calling them "Eastlake." There are hundreds of tons of lumber material cut in fantastic shape and

stuck up on the fronts and parts of buildings which, if the avenging angel of architecture should be permitted to pass over San Francisco, would be torn from present lodgments and consigned to the fiery furnace. The cruel sin has been and is, in men incompetent to distinguish between neat and tasty improvements in, and wild, glaring departures from all right rules in architecture, and the impudence with which they concoct impracticable mutilations, and then seek to shield themselves behind the poor man Eastlake, who never wrote a line on architecture with a view of even suggesting a new order or style in house building. And the wrong is still further augmented by the fact that the more pronounced the deformity, and the more unskillful and inexcusable the feature or construction, the more and louder it is called Eastlake, simply throwing enough of Queen's skirts in to relieve the innocent Eastlake a little sometimes.

SOME CLEVER EXAMPLES.

While all this is true, there are some very clever and pretty examples of the "new style,"—a mixture of consistent ideas, carefully handled by some of the better informed and educated architects,—which display good taste and judgment, and give variety and change, and do their authors credit.

Sanitary Cause of Action.

A NOVEL and important case affecting house property owners has just been determined in the Court of Queen's Bench. According to the evidence adduced, a married lady died last year from the effects of blood-poisoning, induced by the sewer gas which escaped into her house at Croydon from a broken pipe. The lady had an income of £1,000 a year, which "died with her," and her husband brought an action against the owner of the house to recover compensation for the loss he had sustained. It was shown that the owner had made "false and fraudulent" representations as to the healthy condition of the house, and the jury awarded the plaintiff £2,228. The judge also ordered the agreement for letting the house to be rescinded. It is said that the fact of the owner being an architect prejudiced the jury somewhat. The sanitary inspector of the district had passed upon the work. This, with an ordinary owner, must have been sufficient defense, but the jury were evidently of opinion that an architect's duty comprised a rigid inspection of every joint in the soil and waste pipes.

Dallas, Texas, claims to be the most striking example of growth in the Southern States. In 1872-73 it was only a clump of unpretentious warehouses and shanties on the Trinity; now it is solidly built over an area extending back two miles from the river, and has a population of over 35,000.

According to a new law in Berlin, which went into effect the 1st of January last, no house can be built higher than the width of the street on which it faces. If such a law existed in Boston some streets would present nothing but a double row of meek and lowly basements.

Magnificent Timber Region.

FEW people have any good idea of the vast timber resources of Tuolumne County, California. Lying on the southern boundary, along the Mariposa line, on the upper waters of the south and middle forks of the Tuolumne River, is one of the finest bodies of timber in the world. Here, for sixty miles, is an unbroken forest of sugar pine, yellow pine, red and white fir and spruce. The trees are enormous in size, and rise to magnificent heights, while the growth is so dense as to plunge the depths of the forests into a perpetual gloom. The trees average from five feet to ten feet in diameter, and their freedom from limbs and knots greatly enhances their value for lumbering purposes. Nothing extraordinary to find pine and fir trees ten and twelve feet in diameter, straight as an arrow, rising to a height of 150 or 200 feet. This body of timber is easy of access, and only requires to be tapped by a railroad to be turned into a vast source of wealth. As yet most of it is the property of the Government. Much of it, however, has been surveyed, and is now in the market. About two years since some parties projected a railroad through this region and prepared to take 50,000 acres of the timber, but apparently the scheme has fallen through. There was not a legitimate enterprise, as their object was only to get the project under way, and then make a big deal with Eastern capitalists. Now the giant trees stand nodding an invitation to the railroad and the saw-mill. Whenever these two agencies make their advent into this immense forest, old Tuolumne will spring into renewed life and prosperity. The field lies fallow waiting for the coming of enterprise and capital.—*Exchange.*

Those who have recently visited the Albert Palace will have noticed the preparations in the Nave for a further novelty. This, we understand, is to be a *gaum*, or village, to practically illustrate the arts and sports, and varied amusements of *gaum* life in India. For this purpose about fifty skilled artisans and entertainers are now on their way to this country. They will practically show us, in workshops as much like their own as skill and experience can make them, the modes in which they carry on their interesting and important industries. There will be wood carvers, metal workers, mat makers, shawl weavers, carpet weavers, rug makers, and workers in many other handicrafts for which India has long been famous, and for many of which she has attained an undisputed pre-eminence; "Nautch Girls" will dance to the weird strains of the native music; "Snake Charmers" will exhibit their marvelous powers over the beautiful but dangerous reptiles of their native jungles; and conjurers, whose skill in "deceiving the eye and bewildering the sense" has long been the wonder of visitors to the far East, will produce, at the Albert Palace, those marvelous feats which have made them famous throughout the world. No doubt many thousands will be anxious to "see how it's done." These interesting

visitors will arrive towards the end of the present month.—*Sanitary World, London.*

Mineral Products of the United States.

THE second report on "The Mineral Resources of the United States," by Albert Williams, Jr., Chief of the Division of Mining Statistics and Technology, United States Geological Survey, is now in press, and will be issued shortly. This report is for the calendar years 1883 and 1884, and contains detailed statistics for these periods, and also for preceding years, together with much descriptive and technical matter. The following items relating to building materials are taken from this valuable report:—

Building Stone.—It is estimated that the value of the building stone quarried in 1884 was \$19,000,000, as against \$20,000,000 in 1883; the decline being due partly to dullness of trade, and partly to the increased use of other structural materials.

Brick and Tile.—The output was about the same as in 1883, but as manufacturers cut down expenses still further, meeting a lower market, the total value is estimated at \$30,000,000 against \$34,000,000 in 1883.

Lime.—There were 37,000,000 barrels (of 200 pounds) made in 1884, the average value per barrel at the kilns being not over 50 cents, or \$18,500,000. The production was about 5,000,000 barrels greater than in 1883, but owing to the fall in price the total value was about \$700,000 less.

Cement.—About 100,000 barrels (of 400 pounds) of artificial Portland cement were made, or 10,000 barrels more than in 1883; the total value, at \$2.10 per barrel, being \$210,000. The production of cement from natural cement rock, was 3,900,000 barrels (of 300 pounds), or 200,000 barrels less than in 1883, worth, at 90 cents per barrel, \$3,510,000. The total production of all kinds of cement was about 4,000,000 barrels, valued at \$3,720,000.

Marls.—In New Jersey about 875,000 tons, worth \$483,500 at the pits, were dug in 1884. In addition small quantities were produced for local use in some of the Southern States. The production is declining, owing to competition with fertilizers made from phosphate rock, etc.

Gypsum.—In the Atlantic States from Maine to Virginia, 65,000 long tons of land plaster and 60,000 tons of stucco, total, 125,000 tons, were made in 1884, of which nearly all was from Nova Scotia gypsum. The statistics from Michigan have not been reported, but the production did not vary greatly from that in 1883, in which year it was 60,082 short tons of land plaster, and 159,100 barrels (of 300 pounds) of stucco. In Ohio 4,217 short tons of land plaster and 20,307 barrels of stucco were produced. There was also a small production in other parts of the country; but the total amount of domestic gypsum used is not known.—*Exchange.*

Science of Architecture.

[Special for this Journal. By F. Hillert, Architect and Mechanical Engineer.] (Continued)

ACCORDING to the department of the fuel, we have to mention its "combustibility," the temperature required for the beginning of a self-acting oxidation, or the kindling temperature, which is very variable, and is never below 500° C.; its "inflammability" being in proportion to the amount of hydrogen contained in it, its effect or the aggregated quantity of heat, either "absolute," measured according to the weight, or "specific," measured according to the volume, using for a scale the "unit of heat" or caloric, and its "pyrometric" effect of heat, or the temperature of the fire by the perfect combustion, and which is the quotient of the absolute heat expressed in units, and the product of the weights, and the specific heat of the fire gases created, and, lastly, the quantity of air required.

THE FIRE HEARTH IN GENERAL.

Each fire must be so constituted that, by the burning of the fuel, the highest absolute and specific heat possible is obtained; therefore it becomes necessary for the burning to be perfect—all combustible parts are in reality burned; it not only depends on the admission of a sufficient amount of air, but this admission must be so regulated that on intense mixing of the same with the combustible, distilled gases occur; a want of air produces a lower grade of oxidation of the burning parts (hydrogen escapes unconsumed, and the carbonic acid already formed, and in contact with the glowing fuel, is reduced to oxide of carbon); a surplus of air not used is hurtful, by being heated—reducing the temperature in the fire-place. The second condition of a fire hearth is a complete use of the heat produced for heating purposes; and third, the arrangement must be so constructed that, with the admission of air, the discharge of the same, bereft of its oxygen and mixed with the fire gases, is done and conveyed off out of harm's way of men; and in conformity with this consideration, the construction of the fire-place with grating surface, the heating room, ash pit, and the smoke stack must be arranged.

THE FIRE HEARTH, GRATING, AND ASH PIT.

The size of these depends on the amount of fuel to be consumed, the method of heating, and the kind and condition of the fuel. The arrangement must be convenient for working and giving up of the fuel.

The grating surface, which divides the fire-place in the heating room and ash pit, serves to admit and regulate the flow of the atmospheric air; the total grating surface is divided into the free—containing the openings between the grate bars for the passage of the air—and the covered. The proportion between the two—free and covered—varies with the kind of fuel; the size of the total must be ample to take the quantity of fuel to be consumed pro unit of time, which must have a certain height on the grating, and the open-

ings sufficiently large to admit the needed quantity of air.

TABLE FOR AN APPROXIMATE PROPORTION OF THE GRATING:

Kind of Fuel.	100 k g. of fuel pro hour.		Ratio of the fire to the total grating.	
	Total Grating qm. and sq. ft.	Fire Space. c. bin. & cu. feet.		
Coal.	1.4 1.6 sq. m. 15.06 17.21 sq. ft.	0.25 cbin. 29 cbin. 8.82 c. ft. 9.64 c. ft.	1.4 to 1.3	
Hardwood & bitum. coal.	1.2 1.4 12.91 15.06	0.43 0.50 14.34 17.60	1.5 to 1.3	
Soft wood & peat.	1 1.3 10.76 13.98	0.65 0.75 22.89 26.40	1.6 to 1.5	
Charcoal and coke.	1.6 1.8 17.21 19.36	0.53 0.62 18.66 21.82	1.4 to 1.3	

For a high temperature to be obtained in the fire-place, the sides must be lined with a non-conducting material.

The ash pit under the grating, to receive the ashes; the air channel for the passage of air to the fuel must not be low to admit sufficient air, and by a high accumulation of ashes in the pit will heat and burn the grate bars.

THE HEATING ROOM.

In which the action of the created heat is to be made useful, must have a sufficient section, that the fire gases do not obtain too large a velocity, and therefore deliver the produced heat imperfectly. The best and most advantageous cross-section is equal to the free grating surface.

THE SMOKE STACK.

The draft to be produced by the smoke stack is intended, not only to take and convey away the obnoxious and hurtful fire gases after doing the work of heating, but also to furnish the sufficient amount of atmospheric air for a perfect combustion and reduction of the fuel, and must be strong enough to overcome in the same time all the resistances on the hearth—passing of air through the pieces of fuel—and in the flues.

The column of fire gas standing in the smoke stack has, by reason of its high temperature, a smaller density than the atmospheric air, which, resting on top—the mouth—of the chimney, and the pressure at the foot or at the hearth, is larger by a column of air of the same height as the rarified gas column in the smoke stack; the rarified fire gases will raise, and the colder air under the hearth will fill the vacuum formed by the ascending gas, that the excess of pressure between the air and gas column—both of the same height—will furnish dates for formulating an equation to calculate the velocity of the draft in the smoke stack, namely:—

"A family uses for a fire-place one sack of coal, or 100 pounds, weekly, of 8 hours, daily burning, and for each hour 1.3 lbs, creating thereby 40.14 for m=2 fire gas of 1.022 density 20.93 for m=1 1.040
requiring 33.40 lbs of atmospheric air. But since 1 cu. ft. of air weighs 0.08 lbs, then one cubic foot of fire gas will weigh 0.081, furnishing 495 cubic feet of fire gas hourly of 1.022 density."

Assuming that the fire gases in the smoke stack have at least a temperature of 300 degrees, the rarified gas changes its density to 0.65, and its volume to $\frac{777}{403}$ cubic feet per hour,

or $\frac{12.95}{6.72}$ cubic feet per second, to be discharged through the mouth of the chimney.

To calculate the velocity of the ascending fire-gas current, the common formula for the discharge of water under pressure can be applied by substituting for the water column of 1 atmospheric pressure, or 33.82 feet air column of the same weight. Air being 770 lighter than water the air column will have a height of 26,041 feet.

$$\text{Velocity} = 8.02 \sqrt{(26041 + 40) \cdot (-6040 + 0.65 \cdot 40)}$$

$$8.02 \sqrt{14} = 30.07 \text{ ft. per second (wherein the gas column is 40 feet high),}$$

requiring an area for $\frac{m=2}{m=1}$ at the top of the chimney of $\frac{0.42}{0.22}$ sq. feet.

The air required for $\frac{m=2}{m=1}$ per second is $\frac{7.92}{4.00}$ cubic feet, which must pass through the free grating.

The velocity of the draft in the chimney only increases with the square root of the chimney. Any fuel, of which the chemical compounds are known, can be utilized as such, and the fire hearth, etc., arranged for a perfect combustion.

Some time since, citizens in the neighborhood of the California Street Railroad Depot litigated with the company, to abate the nuisance created by soot and coal dust thrown on them from the chimney, caused by imperfect combustion. By an order of Court the chimney was extended about fifty feet, and the mouth reduced to more than one-half of its area, which perfected the draft and combustion, and consequently abated the nuisance. The money expended for litigation would have amply paid for a good design. It is this, one of the instances where money and ignorance, assisted by legal chicanery, produced discontent and unhappiness among the very customers on which a rich corporation depended for their existence. Can they not live peaceably together?

Heating of rooms are either periodically—as for halls, churches, etc.—or are continuously, where the heating arrangement must be capable to furnish heat for a longer period of time.

In a room to be heated, the atmospheric air required for combustion is drawn to the fire from the room, to be restored through the untightness of doors, windows, etc. In opposition to this voluntary ventilation ventilating ovens are constructed, which not only supply the room with sufficient air of the same temperature as in the room, but also draw off, regulate, and discharge the unhealthy air produced into the smoke stack.

CENTRAL HEATING.

Central heating, generally speaking, is every

heating arrangement, by which many rooms, from a common source of heat, are warmed; but specially, we understand such arrangements, by which the conveying of heat (attached to a suitable medium), from the common source, is distributed to the rooms to be warmed.

The calculation of every heating arrangement is divided in two parts: the first consists in the finding of the quantity of heat required per unit of time, for all the rooms to be warmed; the second, the calculation of the corresponding sizes of the parts of the arrangement for the heating, such as the heat accumulating, distributing, conducting, and delivering, composing the whole arrangement. The first has already been stated; the second part is depending on the system selected, either heating by hot air, warm water, or by steam.

HEATING BY HOT AIR.

By heating with hot air, the same is heated outside of the rooms to be warmed, and then conveyed to them. The main parts, therefore, are: an apparatus for the making of the heat, and for heating the air, and the flues conducting the same.

The apparatus for the creation of the heat and for warming of the air, consists of a heating oven (calorifere), and the heating chamber, a room wherein the calorifere is set up.

An oven built for this purpose must fulfill the following conditions, (1) must prevent an overheating of the heating surfaces; (2) must be a so-called "countercurrent" apparatus, wherein the fire gases must have an opposite directed current than the air current; (3) the same must conveniently be cleaned of dust on the outside and of soot on the inside; the cleaning from soot must not require an entry to the heating chamber; (4) the heating surfaces and connecting joints of the different parts must be made smoke tight, and the number of connections must be reduced as much as possible; (5) the expansion and contraction must go on without creating any tension in them; (6) and the utilizing of the radiating heat must be most complete.

The overheating of the surfaces is prevented by a correct proportion of the heat distributing to the heat receiving surfaces, which must be, the larger, the hotter; and smaller, the less warm the heating gases are.

The heat-distributing surface of the heating oven in square meter or square feet, as well as the hourly introduced quantity of air used as the medium for warming the rooms, is calculated by

$$Q = \frac{0.3 \cdot L \cdot (t - t_n)}{W}$$

$$L = \frac{M}{0.3 \cdot (t - t_n)}$$

Wherein Q is the heat-distributing surface of the heating oven in square meter; L, the quantity of air in cubic meter used hourly as medium for heat introducing, respectively, heat leading off; M, the quantity of heat per hour

used up, and to be replaced by heating; W is the mean heat delivery per hour per square meter surface of the heating oven on the surrounding atmospheric air; t, the temperature of the air to be introduced into the rooms to be heated; t_n, the temperature of the air to be discharged from the rooms; t_u, the lowest temperature of the outside air, by which a good warming of the rooms is to be effected.

The mean heat delivery of the heating oven must not be taken below 1,800 C. and not over 2,500. The temperature, t, up to which the air is to be heated by the heating oven, respectively, the heat for the entry into the room to be heated is, on the highest, 50°.

From the above formula can be seen the important fact, not sufficiently appreciated in *praxis*, that to supply the needed transmission heat for a constant temperature, t, the quantity of air, L, cannot be selected arbitrarily; t is for all the rooms to be heated from the same air-heating oven, constantly.

The shape of the heating oven is very variable. The material lately used, in addition with brick and fire brick, is exclusively cast iron, seldom wrought iron.

Flues for conducting the air are, (a) flues for conducting the cold, fresh air from the outside to the heating oven; (b) flues for conducting the heated air to the rooms to be heated; (c) flues for discharging the cooled, spoiled air to the outside (ventilating flues); (d) flues for conducting the used air to the oven for the purpose of reheating (circulating flues).

The use of the flues at 1 is only conditionally recommended, expressly for the starting of the heating operation.

The section of the flues (F) is calculated in consideration of the quantity of air to be conveyed, and the assumed velocity of the same. The velocity, theoretically calculated, is never obtained in reality, the same being reduced by various resistances. If we have not to contend with extraordinary proportions (long, horizontal, and slightly inclined flues, etc.), when for them a correct calculation, under consideration of all the separate, single resistances, must be made, the following formulas for practical use can be applied:—

$$F = \frac{L}{3,600} \left\{ \frac{v}{v_1} \right\}; \quad v = 0.5 \sqrt{\frac{2gH(T-t)}{273+t}}$$

$$v_1 = 0.5 \sqrt{\frac{2gH(T-t)}{273+T}}$$

Wherein T represents the section of the flue in square meter; L, the quantity of air for each hour in cubic meter passing through the flue; v, the velocity of discharging of air into the colder air; v₁, the velocity of air discharging into the warmer air; 2g=19.62; H, the height of the flues in meter. Difference of temperature between the lower and upper end; T, the temperature of the warm air; t, the same for cold air.

The execution of the flues must be very carefully done; the brick work must be made as smooth as possible with smooth joints. Where it is possible, on account of the small size of the walls, glazed clay pipes can be used.

Flues for the conducting of hot air, and those for carrying off the spoiled air, must not (except circulating pipes) lay in the outside walls; they must run up perpendicular; all changes of direction and of section must be avoided.

There, where from the heating chambers, perpendicular or inclined flues, and flues running to different distances, are to be branched off, it must be recommended, besides the regulating arrangements to be put in the walls of the rooms to be heated, to put in a regulating slide valve at the foot of the flue, and the same, later, during the heating, to be closed; that all flues in a uniform manner fulfill their functions as desired, the sections of the flues should be nearly square or circular.

The outlet in the hot-air conductor for the common rooms should be 2-2.25 meter (6.56-7.38 feet); for high halls 3-4 meter (9.84-13.12 feet) above the floor. In very large rooms, where a uniform distribution of the hot air is desired and a powerful ventilation arrangement exists, the discharge opening, of a larger number are put in the floor.

The discharge of the air from the room is done by the circulating heating flues and by heating with ventilating arrangement in winter time close to the floor, and by summer ventilation, or when the air is warm or spoiled by gaslight, close to the ceiling. For the selection of the position of the hot air and the ventilating flues, we observe that the hot air on entering the room ascends towards the ceiling, spreads over the same and towards the windows and the cool walls, where the same cools off, becomes denser, sinks, and in spreading over the floor moves towards the discharge opening in the wall above the floor.

The admission flues for fresh air, and the entry for the same, are placed in a sheltered position. Best to use two openings placed in opposite directions in the building, of which the one is to be used laying opposite to the direction of the wind. The sections of the openings must be such that the air will enter with not a higher velocity than 1.5 meter (4.92 feet) per second. It is of advantage to arrange a large air chamber close to and behind the entry for the settlement of the dust, etc., contained in the air, but which may be accomplished by application of a wire-screen filterer.

The size of the openings for entry and discharge in the room to be heated are regulated by the velocity of the air, and is from 0.5 to 1 meter (1.64-3.28 feet). The openings of all the flues must have good-fitting regulating arrangements. It is of importance that the flues are easy of access to be cleaned.

The building statistics of Washington, D. C., show that an unusually large number of buildings were erected during the past year. According to the figures, 1,330 dwellings and 303 buildings for other purposes were added to the city and the property valuation increased by \$3,564,611.

Builders' Guide..... \$ 2.00

Mechanical Aids to Decoration.

BY A. CURTIS BOND.

MECHANISM in decoration, by which color designs and forms may be indefinitely repeated or multiplied, is always in course of progress; yet it here would seem, with all the varieties of adaptations which we witness, certain defined limits, and in numberless directions of decorative art handiwork well asserts its superiority. Yet mechanical production itself bears the stamp of intelligent purpose and constructive ingenuity, it being, so to speak, a transfer of handwork, an intermediary between the designing brain and hand, shown in the pattern and the execution. The die of the mould for molten metal and plastic material has either itself to be worked out by hand, or, if obtained by impress of relief work, the relief model has to be carved. The production and duplication of much decorative work by mechanical means is recommended by economy, in some instances by greater uniformity, but in the higher spheres of decoration, the absolute uniformity thus obtained falls far short in value of the direct work of the hand. This is evident in ornamenting in color, walls and ceilings, if the execution be skillful, as compared with stenciling. The slight variations in the ornament—for the work of the hand never absolutely repeats itself—is itself a charm, as showing greater freedom of execution, and in some instances greater delicacy of touch. Nevertheless decoration is greatly behooven to the mechanical arts for its diffusion, whether in furniture, structural surfaces, or the ornaments by which interiors are adorned.

One of the greatest novelties promised in mechanical devices, as concerns painting, is a machine consisting of a hand piece, a compressed air chamber, and an air pump, with communicating cup filled with liquid pigment, the latter filled with liquid pigment, which enables the artist to throw out a spray which, in the first instance, forms a fine line, and in the second, widens the line to the desired breadth. The skill required in the operation, the proportions to be given to the line, renders the line, which may even be thus shaded at will, something more than mechanical work.

Many devices for facilitating decorative work may be characterized as assistive. They are brought in co-operatively, and are little more than the brush to the painter. The improvement in tools merits notice here. Take, for instance, the wedge-shaped brush so useful for many purposes, previously to the manufacture of which decorative artisans had to wait the wearing down on one side of their flat brushes. Fortunes have been made by smaller devices than these, suggested primarily by individual requirements and really foreshadowed by the efforts of artificers in their practices or methods, to devise means for escaping inconveniences attached to their tools. The tools used for wood carving, and

adapted to special purposes and to different scales, have been greatly increased in number of late years. There are mechanical devices which may be regarded as completing the operations of the hand, as when, previously to applying veneer, the ornament adjusted to the pattern and already rubbed down with the veneering hammer, and affixed by glue to paper, is placed between hot boards and pressed with hand screws, which, when the glue is dry, allows the work to come out quite clear from the boards and appear as one piece of veneer, which is then ready for application.

The cowl with its screw clamps comes to the aid of the veneerer to secure a graduated pressure, commencing from the center of the piece, being an exact counterpart of curved work, and when flat employed, like the veneering hammer, for plain surfaces. The heat of the cowl quickly penetrates the thin veneer, making the glue exceedingly fluid, and the pressure applied by the clamps soon expels the greater portion of it, and causes the veneer to bed very closely to the work.

Wood carvers, in copying models, are now supplied with a marking or cutting gauge of ingenious construction by which, when once set to the required dimensions, they cannot only give all their markings the relative width, but secure depth of the ground line of the carving, and height of relief portion, or rather the excess on their own panel, so as to enable them to cut away freely, instead of timorously dealing their strokes.

The services of the lathe are particularly prominent in decorative woodwork, particularly in hand-turning. In hand-turning the tool is held by the hand, the changes of form made in the wood being dependent on the relative position or angle of the cutting edge. It is the work of an instant only to vary the relative height and angle of a hand tool to the work, converting it from a roughing to a finishing tool, or even to a scraper, which operations are often impracticable with a tool held in a side rest. With the latter the guidance is solely by the eye; with the lathe the delicate sense of feeling is appealed to, so that any variations may be made with absolute accuracy.

In the development of electricity as a motor under the system of storage, much of the preparatory work of the moulder, whether in wood or metals, will doubtless be greatly aided in the future.

Scaffold brackets is among ingenious contributions to the satisfactory execution of exterior house decorative work on walls. This work is necessarily done much better when the artisan has not to balance himself, but obtains a steady platform without unpleasant swaying. The ladder is made with large hooks at top to hang from window sills, and the platform which is transferable to any of the runs, is fastened by curved hooks attached to an environment bar both to that rung and the rung above.

Album of Mantels \$ 8.00

More Lost Arts than Fresh Discoveries.

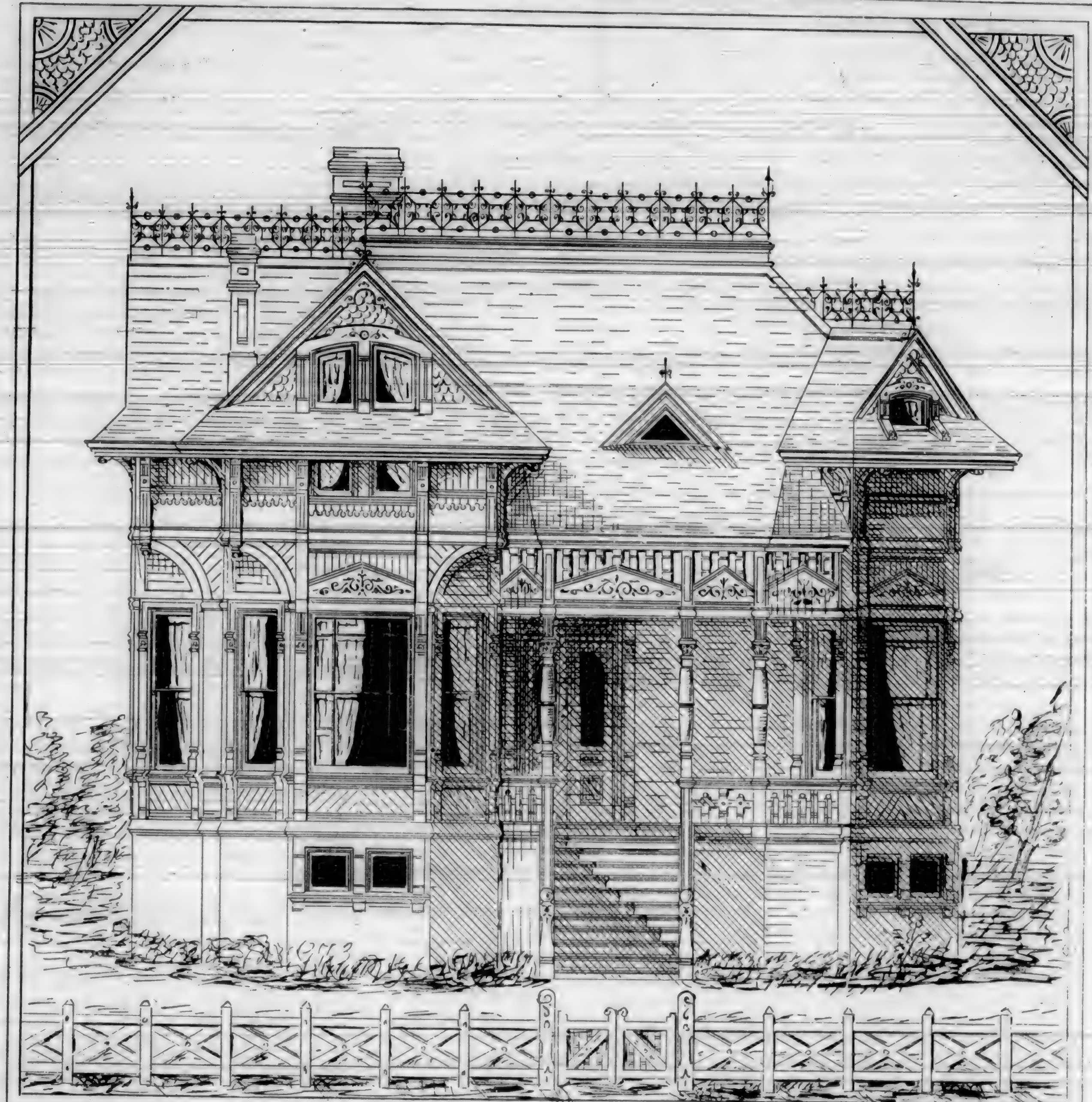
THOSE evolutionists, says the New York *Journal of Commerce*, who believe that our ancestors were fools or pigmies, will find little comfort in the fact that between the ancients and ourselves there are more lost arts than fresh discoveries. Modern chemistry has exhausted itself in the vain effort to produce a compound as useful and durable as the cement of olden times. Vitruvius, who wrote upon architecture before Christ, but whose works have only been printed within the last 450 years, speaks of *opus albarium* and *opus coronarium*, as well-known compounds, too familiar to need description. Among modern experiments are the oil cement of Adams, made of fine whiting and calcined oyster shells ground up in a mill with oil; Pashu's, called Roman cement, is made of argillaceous limestone. Bailey's cement is composed mostly of lime and sharp sand. Mastic cement (sometimes called Hamelin's) is composed of peroxide of lead and oil. The technical "stucco" is made largely of plaster of Paris and lime, and is used for interiors. The Italian stucco is chiefly lime putty, mixed with white sand or powdered marble. We presume the ancient stucco so durable was made of a peculiar sand, or of powdered marble, since the great fault of modern outside work is in the impurity of this foundation. If sand is used, it should be repeatedly washed until it will no longer discolor the purest water. The least particle of earthy matter will be brought into action in warm weather and spoil the adhesion. The wall should be oiled before the stucco is applied, and the latter should be thoroughly oiled every two or three years afterward. But our ancestors, according to the evolutionists nearer the apes than ourselves, could prepare the cement and color it after the fashion that mocks all the modern attempts at either.

Licorice Cultivation.

WHAT is there in the entire vegetable kingdom that California cannot produce? There is scarcely anything that is grown in the earth that does not find favorable soil and climate somewhere within her borders.

The cultivation of the licorice root, is one of the most recent industries of our State, and promises to be not only a successful but a very remunerative one. The experiment has been successfully tried in Sacramento County, where it is estimated that the net receipts from one acre, at thirteen cents per pound, would amount to \$2,400 from the first three years' growth. No doubt other parts of the State would be equally favorable to its growth.—*The Interior*.

It is estimated that the value of the building stone quarried in 1884 was \$19,000,000 as against \$20,000,000 in 1883; the decline being partly due to dullness of trade and partly to the increased use of other structural materials.—*Age of Steel*.



The American Institute of Architects held its annual Convention at Nashville, in October. The number present was not large—not such a representation as should have been, considering the number of practicing architects in the United States. But this fact is not to be considered as evidence of non-interest on the part of the membership, but as proof that architects generally, all over the country, are so engaged in the conduct of their business that it is inconvenient, if not practically impossible for them to leave their offices and business even for a week. As far as the "Fellows" of the Institute residing in San Fran-

cisco are concerned, every one of them would gladly have been present, but time and circumstances forbade that pleasure. But the session is reported to have been one of the most delightful character, and those who did attend were richly repaid for the loss of time and expenditures attending. The most liberal and kind courtesies were extended to the attending members in all directions; so that, aside from the fraternal pleasures and benefits of the occasion, there was a season of enjoyment which will long be remembered by those who made the sacrifice and were present at the Convention of 1885.

Ten years ago a standard car load on all first-class railroads was 20,000 pounds, the weight of the cars being about 20,500 pounds. In 1881 the load on most roads had increased to 40,000 pounds, but the weight of the car had increased to only 22,000 pounds. The master car builders of the Pennsylvania road have now adopted cars to carry 60,000 pounds; while the weight of the cars will be very little increased. Instead of hauling more than one pound of car to one pound of freight, nearly three pounds of freight can now be hauled for one pound of car. The substitution of steel for iron rails has made the change possible.

Arrest of Architects.

MESSRS. WRIGHT & SANDERS, architects of the Union Club Building, northwest corner of Post and Stockton Streets, were arrested, a short time since, for violation of the Conglomerated Code of City Ordinances, denominated "Order defining the fire limits, and regulating the construction of buildings in the city and county of San Francisco," in which is contained all matters specially and properly belonging to the supervision of the fire wardens, chief engineer of the fire department, and his assistants, and also all matters which should be under the separate control and direction of a competent "building board," "board of public work," or a qualified board called by any other name. Without discussing the merits of the Code as now in force, the facts of the case in question are these: The wrought iron, or box girders to be used in the erection of said building, were specified in harmony with the requirements of the law regulating how the girders should be made. The competition was submitted to the wrought iron workers in San Francisco, and the award of contract made to the lowest bidder, who happened to be the agents of an Eastern manufacturer. This created an interest on the part of the San Francisco manufacturers in the character of work that would be produced under the contract.

The girders finally arrived, and, while the material and workmanship employed in their construction was beyond criticism, they were not constructed as the law provides, which reads: "Wrought iron girders, if made of plate iron and of box pattern, shall have proper diaphragms placed in them at distances not exceeding five feet apart, and the riveting shall be done hot, and hammered to a proper conical head." No question was raised as to the sufficiency or strength of the girders, nor the quality of material or workmanship; but the diaphragms were spaced a greater distance apart than five feet, and the rivets were round, button, or cupped heads, instead of "proper conical heads." The matter was freely talked over among interested parties, and it was understood that arrest would follow the attempt to place the girders in position in the building; consequently, when they were lifted and seated on the walls, an arrest complaint was served on the architects, and a prohibitory injunction issued, stopping the work.

Although two weeks or more have passed since the arrest, at the time of this writing, no decision has been rendered, and the case still hangs before the Police Judge, under the charge of violating a city ordinance.

The violation is clearly technical, as it is not likely that the framer of the ordinance ever contemplated or intended any more than that all such girders should be properly made, and sufficiently strong for the purposes intended. But the law is arbitrary in its language, and should be either held as the absolute rule of practice, or be wiped from the or-

dinance book. There is no discretionary power anywhere to regulate matters of this kind; to allow, as in this case, the use of something else every whit as good as that required by the law, to be used. But if local manufacturers are held strictly to the law, even in the matter of conical head rivets "done hot," and diaphragms spaced five feet, then outsiders should be held to the same rule.

THE FIRST RAILROAD IN AMERICA.—In the course of a paper read before the Franklin Institute, bearing the title "Transportation Facilities of the Past and Present," Mr. Barne Le Van corrects the commonly received statement that the Granite Railroad, built at Quincy, Mass., in 1827, by Gridley Bryant, for transporting stone for the Bunker Hill Monument from the granite quarries of Quincy, was the first railroad built in the United States. On this point he presents interesting testimony to prove that, far from being the first, the Granite Railroad was really only the fourth in order of precedence in the United States. We quote from that portion of the paper relating to the subject, with the simple comment that the statements made by the author are of considerable importance from the standpoint of historic accuracy: "Railroads were also first introduced in Pennsylvania. In September, 1809, the first experimental track in the United States was laid out by John Thompson (the father of John Edgar Thompson, who was afterwards the president of the Pennsylvania Railroad Company), civil engineer, of Delaware County, Pa., and constructed under his direction, by Somerville, a Scotch millwright for Thomas Leiper, of Philadelphia. It was sixty yards (one hundred and eighty feet) in length, and graded one and one-half inches to the yard. The gauge was four feet and the sleepers eight feet apart. The experiment with a loaded car was so successful that Leiper in the same year caused the first practical railroad in the United States to be constructed for the transportation of stone from his quarries on Crum Creek to his landing on Ridley Creek, in Delaware County, Pa., a distance of about one mile. It continued in use for nineteen years. Some of the original foundations, consisting of rock in which holes were drilled, and afterward plugged with wood to receive the spikes for holding the sleepers in place, may be seen to this day."—*Exchange.*

There are twenty window glass factories in Pittsburgh, with 276 pots, making 838,400 boxes, at \$3.00 per box. The glass trade is fairly active in all branches. Flint glass works are everywhere running to their full capacity.

Most of the private structures in Russia are built of wood, and it is estimated that the bulk of them burn down every seven or eight years. There is said to be always twenty fires, at least, in different parts of the empire.

Cumming's Details..... \$6.00

Side-Walk Ordinances.

MR. FARWELL of the present Board of Supervisors has for several months seemed to have had "side-walks on the brain." Consequently he has proposed and introduced several orders, more than one of which has been passed by a majority vote of the Board and gone to the mayor for an expression of his opinion, with the result—veto every time; and as often the veto has been sustained; except that the last passed by the Board in October, and vetoed by the mayor, was finally passed by a vote of ten to two over the veto.

The issues and merits of the case may be thus stated: That the first side-walks laid in San Francisco were of wood, that being the only available material in the early days of the city's existence for the purpose. For several years there were no other than wooden side-walks in use, except occasional isolated cases of brick construction. But the brick obtainable failed to serve a good purpose, owing to unequal hardness and durability—the softer wearing away more rapidly, leaving as many pot holes in a side-walk of five hundred square feet as there are small-pox pits in the face of a man who has passed through a bad case of that disease. The late Mr. Lick of Lick Observatory renowned, went further, and obtained pressed brick, such as those used in the facings of buildings, but they proved to be no more durable than the common article, and brick side-walks were passed as impractical. Time and service proved that side-walks of wood construction were also but temporary expedients, as the friction and wear and tear on the surface wore away the fibers of the wood rapidly, causing unevenness, and where knotty pieces were used, the softer parts would wear away around the knots, leaving disagreeable lumps for people to stumble over and sometimes sprain an ankle. Beside this, the sleepers and underside of the planking would soon rot, thereby destroying the hold of the spikes used in securing the planking, and, as a consequence, the spikes would work their way upward, and protrude above the planking, thus forming a rake-like surface for pedestrians to practice toe stumping, and ladies to hook the lower parts of their garments and tear them; and thousands of devout female worshipers have gone to the house of prayer full of indignation at the annoyance of having torn their skirts by catching them on a nail in the side-walk, or, perhaps, the sudden jerk carrying away the pin and string fastenings at the waist and letting more of the under-clothing drop in the street than was agreeable to a lady. During the past ten or fifteen years, however, greater care has been exercised in laying plank side-walks; the surface of the planking more generally being surfaced, larger timbers being used for the sleepers, and the spikes being set in with nail sets. The next to appear for public approval was the

ASPHALTUM SIDE-WALKS. And tens of thousands of feet were laid, both in the business localities and residence quar-

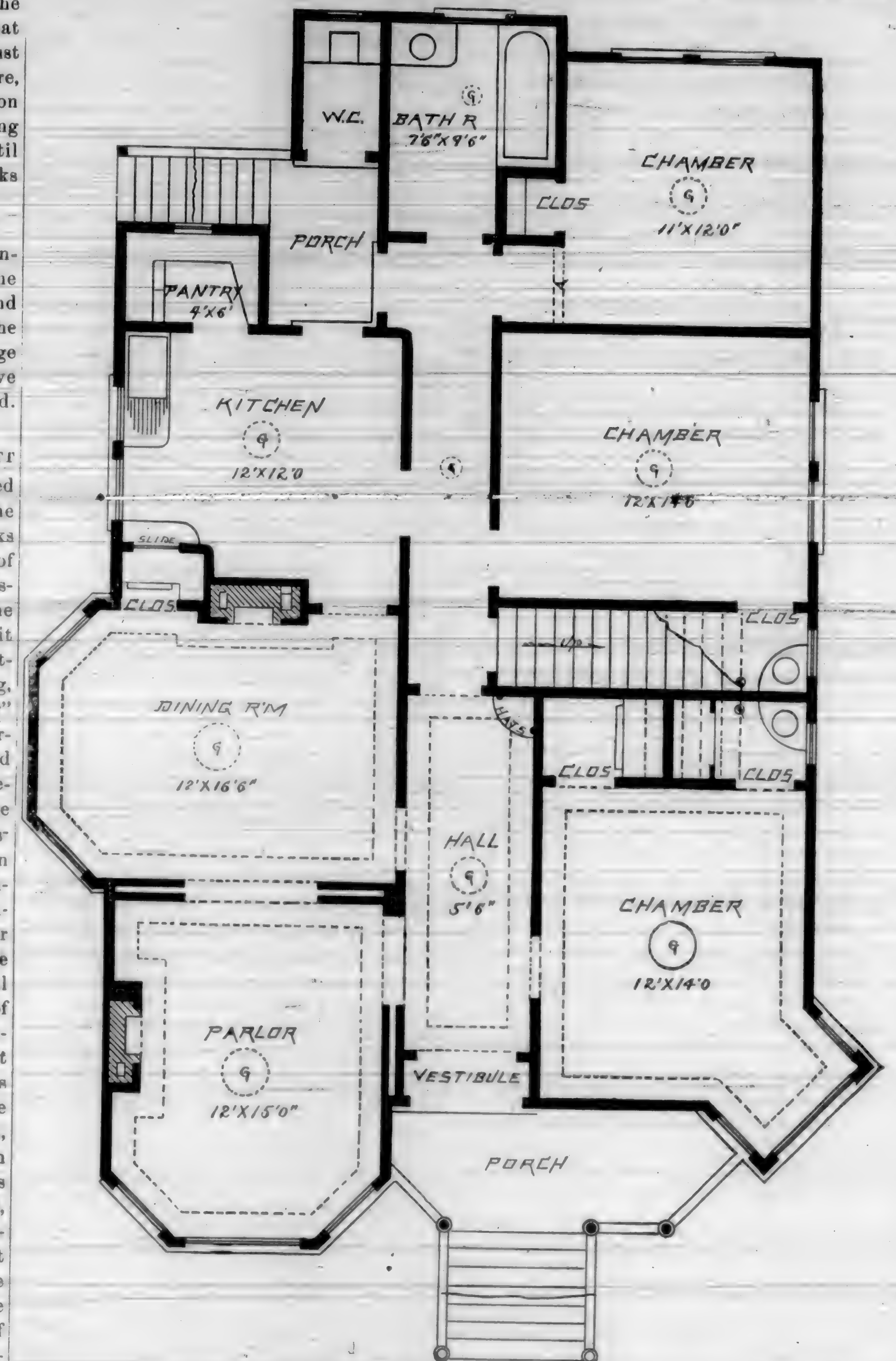
ters. These gave great satisfaction over the wooden constructions; but time proved that even the asphaltum material failed to be just the thing, as exposure to the atmosphere, evaporation, and ordinary wear and tear soon developed defects, such as softening during warm days, cracking, disintegration, etc., until at the present time but few asphalt side-walks are laid. The next in order was the

PATENT STONE OR CONCRETE SIDE-WALK. Which, during the past ten years, has maintained great popularity, and stands to-day the most appreciated of side-walk materials; and is generally adopted by all who can afford the difference in cost over wood. A very large number of the wooden constructions have been torn up, and the patent stone substituted. The conflict between

SUPERVISOR FARWELL AND MAYOR BARTLETT is, the supervisor has aimed and introduced municipal legislation, to hereafter inhibit the construction of any more wooden side-walks within certain limits, and to compel the use of "natural stone, artificial stone, flagging, asphaltum, concrete, or bituminous rock." The mayor on the other hand, seems to think it possible with such a law in force, for importers and dealers in cement, asphaltum, flagging, etc., to "put up a job," and "make a corner" in the materials contemplated by Mr. Farwell's order, and so force property owners and the city to pay exorbitant prices for side-walk work. He further argues in favor of the lumber trade, claiming that there is no present prospect for another lumber combination such as has heretofore at times ruled the lumber market and shoved the price of rough lumber, which is now selling at fifteen dollars per thousand feet, up to twenty-five dollars. The public should be satisfied with the careful forethought of his excellency in the matter of guarding the common interests against the exactions of greedy and soulless monopolies, but the quality, sanitary and pleasurable features of the case seem to be ignored; that the more durable side-walks, as compared with wood, are far more protective of health, and much more agreeable to travel over. The innuendoes of "a cat in the meal bag" is freely hinted, and may exist, but this is a speculative presumption without proof; still it is a fact that the Patent stone is the only one of those named as allowable, likely to be used, and the whole matter simmers down to the question of a corner in cement, to prove the mayor's position correct. Owners can use either of several other kinds of side-walk, but nobody wants them, and entering them in the list of usables, is an appearance without substance.

Revival of Trade.

PREDICTIONS are freely made that the coming fall and winter months will witness a substantial revival of trade. Indications of this nature are observed almost daily, in all parts of the country, and are eagerly recorded by the newspapers, the public hunger for that sort of information having been sharpened by



months and years of enforced abstinence. The history of mercantile and manufacturing business in this country presents a series of reactions, and the pendulum is thought to have swung in this case as far in the direction of low prices and stagnant trade as it can go. Manifestly, therefore, any change that is in store for us is likely to be for the better. But we think it improbable, and not only improbable but undesirable, that any new "boom" of the 1880 pattern will be experienced in the near future. If there should be a gradual and healthy recovery in our industries, chiefly

distinguished by the absence of reckless speculation and intemperate railroad-building, it would be sufficient cause for thankfulness; and for such a change we may indulge a confident hope.

Boston has more apartment houses than any other two cities in the country. New York excepted, and of the most of them it may be said that if the evil one himself had been consulted they could not have been arranged with less regard for the health and comfort of the occupants.—*Boston Post.*

How to Decorate.

Odd pieces of furniture are still used more extensively than matched sets, and for a parlor we would suggest the following pieces: A couple of easy chairs, and occasional chairs, a divan, cabinet, fancy table, and a mantel mirror, with side shelves for the bric-a-brac.

When dining-room furniture is of oak, golden brown draperies and upholstery are very handsome and appropriate.

A library should be made as home like and pleasant as possible. Old pieces of pottery or china, metal work, ivories, glass and such other objects of art manufacture display good taste.

Brass decorations are used very extensively for bedrooms, iron and other metals for hall and vestibule.

No modern house is complete without a Louis Seize room, and the following suggestions will produce the effect desired: The woodwork is painted in a cream tint and a detail picked out in gold; the walls are draped with blue satin and the frieze has light garlands in relief, and small medallions in gold on ivory ground; add a few spindle legged pieces of furniture in gold with pale-tinted satins or light garlanded stuff, and some Dresden china bric-a-brac.

In furnishing bedrooms everything should convey a cool and pleasant appearance; the floors covered with fancy matting which may now be procured in the most beautiful designs and soft colorings; the draperies should be light and airy; if you have a canopy bed, cream white Madras will look remarkably well lined with pale blue silesia; for the bed-spread, pillow-shams, bureau trimmings, and drapery for top and side of canopy, trim with lace or the pretty tassel fringe which comes for the purpose.

Sideboards of either massive oak, extensively carved, or hand-carved mahogany are very pretty and desirable for our dining-rooms.

Leather leads itself in so many ways to easy decoration that cabinets and other articles of furniture are covered with it.—*American Inventor*.

SOME COMICAL BUT COSTLY BLUNDERS.—Mistakes are expensive sometimes. A New Yorker had a lot seventy-five feet wide, intending to build four houses of equal fronts on it, and one of the middle ones first. He employed a firm of surveyors to locate the house, and they located it so that the remaining space on one side was only ten feet wide. The error was not discovered until the house was done, the proprietor having no time, probably, for such trifles. Then he sued the surveyors for damages, but they won a verdict on the ground that their plan was accepted and paid for as satisfactory, although it located the corner-stone nine feet farther in one direction than was intended. This mistake was rather more serious than that played upon a resident in a brown-stone front in Forty-seventh Street, who returned from business one

night to find the entire stoop of his house in ruins, the heavy stonework having been pulled to the ground. His wife said a man had come with orders to demolish, and had done so. Although she did not know enough to command a halt for explanation, she did observe the name on the wagons. The indignant citizen took measures to prosecute, when it was found that the employer of the men had ordered them to go to the same number in Forty-eighth Street, instead of to Forty-seventh. He had learned of the mistake and had contracted to have the wrong stoop rebuilt, and he was surprised to learn that the work had not been done. These incidents of metropolitan life show that mistakes are there regarded with very little concern, those responsible not even taking the trouble to apologize or even explain. The same amount of pains spent in doing a job well that is spent in getting the job to do would pay.—*Springfield Republican*.

The Better Bridges.

A VERY pretty fight is in progress in Japan over the question of American vs. English bridges. Early in the year Prof. J. A. Waddell, of the University of Tokio, published an elaborate work in two volumes, for the purpose of pointing out to the civil and mechanical engineers of Japan the superiority of American to English types of bridges, and the mistake of the Japanese in following the practice of the latter. On account of defects, which the author points out in detail, the author concludes that "the trouble with English bridges, and consequently with those of this country (Japan), is that they are designed by railroad engineers, who have not made a special study of bridge designing, and are therefore incompetent to do the work intrusted to them." On the other hand the author points out in detail his reasons for the assertion: "That the United States leads the world in bridge building is a fact undisputed even in Europe." Professor Waddell's book set several bridge engineers to writing letters to the *Japan Mail*, in which the statement that American engineers now lead the world in designing bridge work is called in question. Professor Waddell replies in a very pungent letter, and, taking up his opponent's arguments, answers them in detail. He remarks that actual inspection of English bridge work in Japan shows a quality of workmanship that is even worse than the cheapest highway bridges of America. One case mentioned, a railway bridge, has its bottom cords so warped that "the floor beams bear on both sides of the same;" shims of $\frac{1}{8}$ and $\frac{1}{4}$ -inch iron are freely used, and there are open joints in the top cord that paint will not hide.—*Age of Steel*.

So rapid is the transmission of the electric current along the lines of the telegraph wire that, supposing it were possible to carry the wires eight times around the earth, it would occupy but one second of time.—*Doidge's Annual*.

An English Plan of Ventilation.

THE following description of Dr. Hogg's plan of ventilating and warming dwellings is taken from an account in the *London Lancet*. It is one of those which are more ingenious than practical, and just complicated enough to please the English: "According to this, none of the windows are to be opened; and there is but one fire-place,—that in the kitchen. Underneath the hall a large passage is used as the intake of fresh air, where it can be cooled in summer by ice or water-spray; while in winter it is warmed by hot steam pipes, economically heated by a small coke stove. The air then passes up into the hall, from which it is separated only by an iron trellis-work, and travels into every room of the house by apertures made in the skirtings and cornices. In the ceiling of each room there are one or two openings, and exhaust shafts leading to the foul-air chamber in the roof of the house, the exhaust suction being produced by a large shaft, which runs from the foul-air chamber down to the back of the kitchen fire, where the heat of the boiler and the fire suffice to attract the air. From the back of the kitchen fire, in the basement of the house, the air again travels up, a square brick shaft or chimney conveying it through the roof and into the open. In the center of this shaft is a circular metallic flue, which carries away the smoke of the kitchen fire; and this flue, always more or less heated, stimulates the current of air."—*Sanitary News*.

A Rapidly Growing Health Evil.

IT is not generally known that coal oil and gasoline stoves rapidly vitiate the air of a room for breathing purposes by the development of large quantities of carbonic dioxide. How much longer must this continue before manufacturers of such goods will obviate this new danger by inventing some form of hood and pipe for conveying this poisonous gas to the outside atmosphere? Volumes have been written concerning the ventilation of homes, and the injury that arises, especially to children and the infirm, from crowding too many people together in closed apartments, and now, with the introduction of oil and gasoline stoves in the household, a new difficulty presents itself which is not easily remedied in the endeavor to provide for health and comfort. These stoves are frequently found with several large burners in full blast, in small kitchens hardly large enough to contain air to supply the healthful requirements of one person.

Evils of this kind, where they are widely spread, must have a terrible effect upon the strength of a population who breathe every day such an atmosphere, and, thus far, we have seen no remedy. It is certainly a question for grave consideration, and whoever takes the problem in hand at once, and provides a means, at low cost, to obviate this nuisance, will confer a great blessing upon thousands who are innocently undermining their health.—*American Inventor*.

The bustling, hurrying man, as a matter of fact, is a poor worker. Too much of his steam power is expended in kicking up the dust. The habit of hurrying and being in a hurry, is fatal to good work, and diminishes the amount of work a good man can do. The men who accomplish most never seem in a hurry, no matter how much they have to do. They are not troubled for lack of time, for they make the most of the minutes by working in a methodical manner, finishing each job properly, and not expending their nerve force in bustle.—*Exchange*.

The value of well-conducted trade journals to the interest they represent, is becoming more apparent every day. They are the best possible means of communication between members of the trade, and for that reason no business man can afford to ignore them. The live manufacturer or jobber desires to keep his name constantly before the trade, and in no better way can he do it than through an advertisement in this trade Journal.

BOOK NOTICES.

Principles of Economy in the Design of Metallic Bridges. By C. B. Bender; Wiley & Sons, N. Y., publishers. A new book of 195 pages, 6x10 inches, with elaborate and comprehensive plates and diagrams additional. The subject matter is handled with ability and thoroughness.

Steam Engine Catechism, 1885. By Robert Grimshaw, President James Watts Association, received. A handy little work of 149 pages, on matters suggested by its title—engines, and steam in its ten thousand applications as a motive power. It will be found useful to young engineers, interesting to older heads, and convenient for examination boards. Price, \$1.00.

The Principles of House Drainage is the title of a well-written book of 125 pages, 5x8 inches, comprising the substance of three lectures delivered by J. Pickering Putnam, before the Suffolk District Medical Society, and the Boston Society of Architects, at the Massachusetts Institute of Technology. Traps, Siphonage, Ventilation, Evaporation, Wastes, Drains, and the material features involved in sanitary science, are all handled and discussed in clear and intelligent language. Published by Ticknor & Co., and for sale at office of this Journal.

Architectural Studies.—Store Fronts and Interior Details, edited by F. A. Wright, architect, and published by W. T. Comstock, New York. Sent by mail to any part of the world free of postage. Price, \$1.00 each part or number. Part No. 2 contains twelve neatly produced plates, with numerous scale details.

Sanitary House Inspection. "Hints and helps regarding the choice of a healthy home in city or country." By William Paul Gerhard, C. E. Published by Wiley & Sons, New York. Contains 145 pages of thoughtfully considered and well-written matter, which should be read by all interested in the subjects treated.

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Amateur Carpenters.

It is an excellent thing for any man, whatever his business in life may be, to acquire a fair degree of mechanical skill and familiarity with tools and machinery. Such knowledge never comes amiss, even if its possessor is so fortunate as to be under no necessity of ever using it as a means of livelihood; just as a thorough practical acquaintance with the minutest details of housekeeping is valuable to any woman, though she may be surrounded by luxury all her life and have a servant to wait on her at every turn.

But it does not follow, by any manner of means, that an amateur or half-trained workman is profitable to his employer, even at half price, or at any price. Experiments of that kind are oftener made, it would seem, in the various branches of carpenter work than in most other trades—for the reason, probably, that it is easier and more common to pick up in a desultory way a superficial knowledge of carpentry than of other callings which do not in fact require so much skill and judgment for their thorough mastery. To become a good carpenter, capable of estimating a job fairly and performing it honestly, is a matter not of a few weeks or months, but of years of diligent and conscientious work. And while the temptation is very great, in awarding the contract for a job, to give it to the lowest bidder without due regard to the probability of getting the worth of one's money, it is generally found that a single lesson of that kind is sufficient. In a broad sense the rule that "the best is the

cheapest" holds good in carpenter work as in nearly everything else.

A vigorous protest against the employment of what it calls "saw and hatchet carpenters," is made by the *Southern Lumberman*, which imputes to them not only want of skill but want of honesty as well. As an illustration, it mentions a building contract which one of that class of carpenters offer to take for \$500, while the material alone came to \$570. Somebody was badly cheated, of course, and probably the lumber-dealer, the workmen and the owner of the building all suffered more or less. Incompetency and false pretense in all trades and professions should be steadily discouraged; and the only way to put an effectual check upon them is to give the preference invariably to the trained workman, who has earned and can rightfully wear the title he claims.—*Mechanical News*.

Mr. Stanley says the length of the Congo is 2,100 miles, and the Mississippi and the Nile together would scarcely equal its tribute of water to the ocean. From the mouth of the river a steamer drawing 15 feet can steam up 110 miles, at which point a land journey of 52 miles has to be taken, on account of rapids. Then another steaming or rowing voyage of 88 miles occurs, which is succeeded by a land journey of 95 miles. After that it is possible to steam up another 1,060 miles.

Natural gas is being found in many sections of the United States, Los Angeles, California, being in the list, with fair prospects of a good thing on hand.

Disposing of Dead Bodies.

THE latest method proposed for disposing of the dead strikes one a little curiously at first, but, after a little consideration it seems not to be a very bad idea. It is a proposal by a Mr. Pratt, an Englishman, to the effect that the bodies of the dead, instead of being buried in earth or cremated, should be encased in caskets and placed in a concrete slab, seven feet long by three feet six inches wide, having a place in the center large enough to receive the coffin. Soft concrete should then be mixed and filled in around the casket, and a concrete slab six inches thick be placed on top. The sarcophagi should then be banded heavily with iron, and, as fast as they accumulate, they should be built into a sea-wall to protect the coast of England from the ever recurring devastations of the sea. The blocks would all be of the same size, regardless of the size of the casket. In the case of infant burial, two or more could be confined in one block of concrete. This is really the first scheme which has been brought forth by which the bodies of the dead could be utilized to any good purpose. It is a good suggestion from an economist's point of view, as it provides coast defenses and a revenue at the same time. The idea is respectfully referred to the Committee of the House of Representatives on Rivers and Harbors. Thus, in the revised words of an ancient rhymester,

A good man's bones when dead and turned to clay,
May build a wall to keep the sea away.
—Sanitary News.

A BLACK ENAMEL FOR IRON.—*Le Gen* *e* *vil* of Paris says: For the last few years, many efforts have been made by different processes and various materials to protect iron and give it a brilliant black coating. Recently M. Puscher, of Nuremberg, has described a very simple process whereby he claims to cover iron with a black coating similar to enamel, and very much more evenly and regularly distributed, as it is not laid upon the metal with a brush or any similar tool. M. Puscher places in a vessel about eighteen inches high sufficient finely-powdered coal to cover the bottom to the depth of about three-quarters of an inch, and over this at a height of about one inch is placed a grating which carries the objects to be treated. The vessel is then covered and luted down tightly, and placed upon a brisk fire. The vessel is at once filled with steam, which soon evaporates, and is then charged with bituminous vapor. The firing is kept up for about half an hour, so that the bottom of the vessel is dull red; after which it is removed, and, when cool, opened. The residue of the coal is found in the form of coke, and the objects placed upon the grating, which have been at a fairly high temperature for a considerable time, are found to be covered with a black coating having all the appearances of enamel but of extreme tenacity and a considerable degree of elasticity. It is claimed that objects thus treated may be bent and exposed to great variations of temperature without in the least affecting the coating deposited on their surfaces.

Rosewood.

ROSEWOOD trees are found in South America and in the East Indies and neighboring islands. There are half a dozen kinds. The name is not taken from the color of the wood, as is generally supposed, but by reason of rose-like fragrance which it possesses when first cut. Some of the trees grow so large that planks four feet broad and ten feet in length can be cut from them. The broad planks are principally used to make tops for piano-fortes. The rosewood tree is remarkable for its beauty. Such is its value in manufactures as an ornamental wood, that some of the forests where it once grew abundantly have now scarcely a single specimen. New plantations have been set out, so that the supply will not be exhausted. —*Lumber Trade Journal*.

California redwood, particularly in the shape of dimension shingles, seems to be gaining ground in the Chicago and adjoining markets. They are largely used in suburban residences, not only on the roofs, but to take the place of siding. Their rich color makes them admirably adapted to this use without the addition of paint. Only recently the supply in Chicago was entirely exhausted, and users were obliged to wait for the arrival of consignments. There is also considerable demand for finishing lumber, and redwood is seen in a good many places where two or three years ago it would not have been thought of. —*Northwestern Lumberman*.

Experienced lumbermen have always held that timber cut in the spring was not durable for building purposes. Recent scientific investigations sustain this belief. It is shown that the richer the wood is in sulphuric acid and potassium the more likely it is to rot and mould. Wood cut in the spring contains eight times as much of the former and five times as much of the latter as wood cut in the winter.

Better times are predicted, generally, in all lines of trade and manufacture. Mills and manufactories that have been entirely idle, or working on half or three quarters, are coming to run full hours. This is pleasurable to contemplate, and would be more so if there were assurances of permanency. But experience proves that when the ball begins to roll, there is such haste and anxiety to make it go faster that it gets beyond control and soon collapses; i. e., eagerness to create demand beyond natural requirements, forcing sales and flooding and glutting the markets.

Notwithstanding the general complainings of "dull times" in California, matters have gone on fairly prosperously, and the future outlook is good, and hopeful expressions are freely repeated in business circles.

Sir Christopher Wren retired from public life at eighty-six; and after that he spent five years in literary, astronomical, and religious enjoyment.

Unfair Treatment of Contractors.

THERE seems to be some misapprehension on the part of the owners of projected buildings as to the limitation of their rights in the invitation and acceptance of competitive bids from contractors. It is but just that the lowest tender by a responsible bidder should be accepted, and personal friendship between owner and contractor, political or religious affiliation or business connection should be no cause for unfair discrimination.

In cases coming under our notice all of these causes have worked in determining the acceptance of tenders on the part of owners, contrary to the advice and against the will of their architects. In one case the owner attempted to excuse his acceptance of the higher bid upon the ground that "he had business relations with the bidder." In another he "had intended from the first that the accepted bidders should do the work, and only desired the other bids as a means of comparison of prices." In the first case the architect threw up the commission rather than be a party to such injustice; and in the second the owner was compelled to pay the lowest bidder for his time and trouble, under threat of the same loss of service.

Such action is, we take it, often caused by a lack of knowledge of the expense of time and labor required in making estimates, rather than by a willingness to take unfair advantage. We commend the honorable action of the two architects cited to their colleagues in the profession when like contingencies arise.

If any one thinks that the final denudation of our pine lands is an impossibility, let him take a trip over the Wisconsin Valley division of the Chicago, Milwaukee, & St. Paul railroad. When he has strained his eyes over a stretch of 80 miles of country, which, almost the entire distance, is a fire-swept waste of small, dead pines, with scattering live trees here and there, and an occasional "clump" of green, fair-sized timber, he will admit that here, at least, the available pine has been nearly exhausted; for almost every section of this vast area has been cut over, and all the pine large enough for lumber taken off. This is in Wisconsin, not Michigan, it must be remembered. A journey through the Black River region of the same State brings to view a like devastation of pine. As it has required only about thirty years of cutting to strip this territory, with a limited consumptive demand in the first years of the slaughter, we can well conclude that in less than thirty years from the present, very little available pine will be left in either Michigan or Wisconsin.

"Now, Johnnie," said the teacher, "if your father borrows \$100 and promises to pay \$10 a week, how much will he owe in seven weeks?" "One hundred dollars," said Johnnie. "I'm afraid you don't know your lesson very well," remarked the teacher. "I may not know my lesson very well," Johnnie frankly acknowledged, "but I know my father."

Street Architecture, New York.

WITHOUT objecting in the least to the conclusions of the writer in the *Record and Guide*, we are disposed to think that the decline in picturesque city architecture has been due much less to the unremunerative character of investments in oriels and turrets than to the change in the municipal regulations in regard to building, which now forbid any of those encroachments on the street lines, in the way of projections and bays, which once did so much to break up the monotony of the street facades. It is not easy for the best architect to give picturesqueness to a flat four-story front, twenty-five feet wide, and the praiseworthy efforts which are often made by the owners on a given street, to persuade all who build on the street to set their houses far enough back from the street line to allow of pleasant bays and oriels in the reserved space, are usually thwarted by the obstinacy of some "hog," to give him the title which his neighbors generally bestow upon him, who insists on thrusting the clumsy square mass of his own house into the space which it was decided to keep open. For this reason, more than any other, the New York architects have returned to something like the monotonous flatness of design of twenty years ago; but it is due to them to say that they have found means to deal with their severe restrictions in ways which are often surprisingly clever. Not to mention particular instances, the professional visitor to the upper portion of New York is now constantly struck by successful devices for securing shadow in the middle of flat fronts, as well as by most interesting examples of facades in which no relief is attempted, which give him, we think, quite as much pleasure as the mingled compositions and caricatures of Fifty-seventh Street; and although we are willing to go even farther than the *Record and Guide* in assuring owners and architects who are disposed to adorn the unrestricted districts with beautiful detached houses, like those of Hamstead and Chelsea, or like the little detached "hotels" which cover the new and fashionable part of Paris, that the taste for such habitations is already prevalent enough in New York to ensure success to those who cater to it wisely, we trust that the beginning of the work of improvement, if not also the end of it, may be intrusted to architects who can temper the exuberance of their fancy with a little discretion. —*American Architect and Building News*.

Moscow has an enormous new cathedral, built in the Græco-Byzantine style, which covers 73,000 square feet, and has cost \$12,000,000. It has five cupolas, on which 900 pounds of gold were used as embellishment, and thirteen bells, the largest as big again as the "Great Paul" in London. The largest door weighs thirteen tons, and cost \$310,000. The marble in the building cost \$1,500,000.

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A New Phase in the Chinese Question—A Bold Strike against White Labor.

THE Mongolian cigar-makers then in the employ of Koenigsberger, Falk & Mayer, made a bold move on the 23d of October, and called a new deal, demanding the discharge of every white man engaged with them in the making of cigars.

This is the first high-handed break that the Celestials have attempted, aimed directly against white labor; and although it was a bad move for them, and a fortunate one for the white men, it is, nevertheless, a large straw that shows which way the wind blows; i. e., what the Chinese would do if they could, and what they will do when and as often as opportunity permits—in isolated cases; and what they will do *en masse* should they ever be able to gain the points they, as a people, are playing for. It was bad enough that men of our own race and tongue should be humiliated to work side by side, or within the same walls, with creatures who, possessing the power, would trample in the dust and persecute with relentless severity and hate, and drive to penury and want, through unequal competition; but when they, upon American soil, raise the hand of open rebellion, assume an aggressive attitude, and demand the humiliation of those upon whose labor rights they are infringing, it is not to be wondered at that the working people as a whole are alive to the occasion, and greatly agitated; for in this first move there is a warning that should be heeded. It is only one instance, but it is as the ripple that precedes the storm, should they as a people strengthen and advance their present foothold, and become sufficiently numerous in the United States, with unrestricted liberty under our laws, to monopolize—as they will—all avenues of labor, and crowd every interest of the working and middle classes to an extent that will pauperize millions who otherwise might raise themselves, by their labor, to positions and conditions of comfort and moderate affluence.

All the thin-skinned sentimentalism that is prated in behalf of the "poor persecuted Chinamen," is all bosh—a waste of sympathy,—even if it is indorsed by Rev. Henry Ward Beecher, and others like him, who have themselves committed some very considerable errors of judgment, if not in acts in other directions. It may be well enough in a Christianizing sense, where a few can be held under "evangelizing" and "regenerating" influences, but it won't do as an immigrating, labor, and business proposition.

The proofs of the "nature of the beast" are too well established all along the Pacific Coast to need confirmation by further recitals, and this testimony is distributing itself in many other cities and States, to such an extent and of such character that the comparatively few Chinamen now on this continent are attracting very large attention, and eyes that have been blind, refusing to see what the people of this western coast have seen for years, are be-

ginning to open and discover that there is a very important question to settle in this matter of Chinese hording and swarming upon American soil.

There is a great deal said about coolieism; but it matters not whether they come as coolies or free men, their presence is equally objectionable; perhaps more so as free agents, as then absolute personal interests would likely stimulate, rather than modify their ambitions, and augment rather than lessen their natural animosities toward the white race; adding zest and determination to their purposes of monopolizing, centralizing and controlling, until Chinese work-shops and manufactories worked by Chinese coolies or free men, as the case may be, will be located in every State, city, town, and manufacturing district upon the continent.

These assertions are not mere speculative presumptions, but are rational, reasonable, natural, common-sense probabilities,—conclusions clearly deducible from the practical experiences and contacts so far had with the people in question, who, as found in California, are a cunning, unscrupulous, treacherous and unprincipled race, in whom the shadow of truthfulness does not exist, when either falsehood or perjury can be utilized to advantage.

The firm named have wisely concluded to drop out all Mongolian help in the future, and employ white labor only. This is all very well as far as it goes, and is as it should be; but doing so will not deprive the heathen strikers of the knowledge they have gained, nor the mechanical art acquired in the manufacture of cigars, and, as it was of old, the race being mixed in with our own people are likely not only to be a "thorn in the side" of the working classes for all time, but manufacturers also will hereafter have increased cause to regret that they have educated a race against whom they cannot compete, upon any terms at present recognized as fair and equal.

Mortar for sewer work in all cases should be capable of setting in water. Portland cement and lia limes make good hydraulic mortar. The proportions of cement, or of lime to sand, should not exceed two and a half of clean, sharp sand to one, by measure, of ground Portland cement or lia lime. If clean furnace ashes or slag are available, there may be two of sand and one-half of ashes or slag, the whole to be mixed in a revolving pan, each panful to have twenty minutes' grinding. When mortar is used with bricks, the bed and joints should be spread thick and full over the entire area of both bed and joint, leaving less than one-eighth of an inch in thickness of mortar. In four cubic yards of completed brickwork there should be not less than one cubic yard of mortar incorporated. In making mortar or concrete, it will be of the utmost importance to use clean materials and to preserve them clean. The water used for wetting bricks and for mixing concrete and mortar must be free from silt. Concrete and mortar should also be used on clean surfaces. —*Sir R. Rawlinson, C. E.*

Healthful—Height of Stories.

THE *Sanitary News* quotes from the proceedings of the Sanitary Institute of Great Britain some sensible remarks by Mr. John Honeyman upon the advantages of low ceilings for the rooms of the smaller class of houses. In Mr. Honeyman's opinion, the popular notion that high ceilings are conducive to the healthfulness of rooms is erroneous. It is true that a room with a high ceiling contains a larger cube of air, and, supposing the atmosphere of such a room to be perfectly pure to begin with, a man could exist longer in it before dying of suffocation than he could in a low room. Here, however, the sanitary advantages of the high room end; and ventilation, properly so called, that is, the constant change of the atmosphere, goes on, as most architects know, more satisfactorily in a room with a low ceiling than a high one. If the windows and doors extend nearly to the ceiling, as will usually be the case if the room is not more than eight feet high, the leakage of air which goes on to a very great extent around them, keeps all parts of the atmosphere of the room in motion, instead of moving the lower portion only, leaving an inverted lake of foul and hot air undisturbed under the ceiling, as is always the case where high rooms, inhabited in winter, depend for the movement of the air in them upon openings placed at some distance below the ceiling. To have the currents of fresh air circulate only in the lower part of the room, leaving the upper portion of the air in it unaffected, is practically a much worse way of ventilating the room than, with the same movement of the air, to cut off the upper stagnant portion of it by a low ceiling; for the stagnant atmospheric lake under the high ceiling, although motionless, keeps actively at work, under the law of the diffusion of gases, fouling the fresh currents which circulate beneath it; while, with low rooms and high windows, no accumulation of stagnant air can exist, the hot and foul atmospheric strata being swept constantly from the ceiling by the currents, just as dust is swept from the floor by a broom. Indirectly, moreover, the low ceiling improves the healthfulness of the room by its economy of heat. In a lofty room the poor man's stove expends a large amount of its energy in warming the ceiling, and the floor of the tenement overhead, without doing its owner any good whatever. It is only necessary to sit on top of a step-ladder for a while in a high room artificially warmed, to be convinced, without reference to a thermometer, that the temperature next the ceiling is, in all ordinary cases, far higher than that of the remaining air in the room. If the ceiling is not more than eight feet high or so, with windows to the top, diffusion co-operates with the atmospheric currents to bring the warm air at the ceiling down where it can be felt by the people in the room, while the cool drafts which blow in above the windows and doors, striking first upon the ceiling close by, carry off

from it by convection a very considerable amount of heat, for the further comfort of the poor tenant's family. Saving thus a large part of the heat from the stove, which would otherwise be wasted, the proprietor of the room is less disposed to convert his room into an air-tight box, by stopping up all the crevices around the windows and doors with weather-strips or rags, and even if he begins, from force of habit, to do so, the currents from the upper part of the windows and doors are, if they strike on or near the ceiling, so quickly modified in temperature as not to be felt as cold drafts; and this source of fresh air is left unmolested. In practice, we believe that most persons accustomed to observe the condition of air in inhabited places will agree that where similar means are provided for supplying and withdrawing air, such as a register and a fire-place, low rooms are, as a rule, decidedly fresher than high ones. In many cases a lofty room, supplied with pure warm air from a register, and ventilated by an open fire, will be found very oppressive, apparently from the influence of the large volume of stagnant air in the upper portion; while low, old-fashioned rooms with fire-places are almost always fresh and pleasant.—*American Architect and Building News*.

It is surprising to note how frequently one meets engineers, especially those in practical charge of engines, who have an idea that the function of the steam jacket is to prevent radiation of heat from the cylinder to the atmosphere, and regard its purpose in the same light as they do that of felting and lagging. In our last issue we briefly pointed out its true mission, and need not repeat it here. But this not uncommon fallacy of considering it as a non-conducting device instead of as a supply of heat for the entering and expanding steam, is worthy of special mention. We know of a naval engineer in Government service, who, much to the discomfort of his assistants, insisted on having the highest attainable temperature in the engine room, closing up all doors and windows, his directions being reinforced by the explanation: "What's the use of a steam jacket to prevent the radiation of heat from the cylinder, if the temperature of the room is not in the eighties or nineties?" And this view is cropping out constantly, in many other ways, as when exhaust steam, or steam of a pressure much reduced below that corresponding to the initial pressure of steam, is let into the jackets. If a steam jacket is to be of any practical use, the temperature of the steam it contains must at least equal that of the steam entering the cylinder. A queer and expensive kind of non-conducting device, indeed, in which the radiating surface is increased beyond that of the cylinder itself, and in which steam specially drawn from the boiler is the means.—*American Engineer*.

We Will Donate in Cash \$150

To ANY person, club, society, or association, that secures two hundred cash subscribers for this Journal.

The revival of business is not confined to this country alone, as recent reports from Europe, and more especially from the British Islands, indicate renewed and hopeful activity in manufactures and commerce, though the newly aroused spirit of enterprise can hardly be characterized as a boom. In these days of rapid communications, the people of all civilized countries are affected by much the same causes; but it is hardly possible for general life or general torpidity to prevail in one country while the opposite conditions continue in others.—*Western Architect and Builder*.

The postal laws seem to have been framed in some particulars expressly to oppress monthly publications for the benefit of weeklies. Take the case of the *Architect and Builder*, for instance. It costs two cents per copy to deliver it in this city, while the same paper is delivered at the residences and offices of California and New York subscribers for one cent per pound. All weeklies are delivered in the city of publication or anywhere else in the United States at one cent a pound. The absurdity of such an arrangement as this must be apparent to any one capable of a moment's reflection. In the case of monthly magazines the injustice is even more marked, as in the instance of *Harper's Magazine* as compared with the *Iron Age*. The weight of each is about the same, yet the latter is delivered to New York City subscribers for one cent a pound, because it is a weekly, while it costs two cents a copy, or about five cents a pound, to deliver *Harper's*. There is a general disposition upon the part of the monthlies to bring this matter to the attention of Congress and demand a more equitable distribution of postal burdens.—*Western Architect and Builder*.

"I'll tell you a good thing," said the Iowa dealer from Fort Dodge who came in "just to have a chat." "It illustrates how green a drummer sometimes is. A man from Wisconsin, say Oconto, for instance, sold a yard man in our town a load of cedar posts. There were 633 posts all told; the price was 10 cents apiece, and the amount \$63.30. The freight bill was \$69.42, which our lumber dealer paid. He then asked the Wisconsin post dealers to remit him the difference, \$6.12, and they would be square. The Wisconsin men went to talking about the pay for their posts, but our townsman said he owed them nothing, but that on the other hand they owed him. He had bought the posts delivered. An attorney was consulted by the Wisconsin gentlemen, but he told them they had no case. The drummer, I suppose, knew a cedar post when he saw it, but it probably did not occur to him that the railroad make any charge for hauling."—*North-western Lumberman*.

"Michael Angelo preserved his creative genius even to extreme old age; there is a device said to have been invented by him, of an old man represented in a go-cart, with an hour-glass upon it; and the inscription *Ancora mpara!*—Yet I am learning."

AN EXTRAORDINARY OFFER.

To All Wanting Employment.

We want Live, Energetic, and Capable Agents in every county in the United States and Canada, to sell a patent article of great merit, on its merits. An article having a large sale, paying over 100 per cent profit, having no competition, and on which the agent is protected in the exclusive sale by a deed given for each and every county he may secure from us. With all these advantages to our agents, and the fact that it is an article that can be sold to every house owner, it might not be necessary to make an "EXTRAORDINARY OFFER" to secure good agents at once, but we have concluded to make it to show, not only our confidence in the merits of our invention, but in its salability by any agent that will handle it with energy. Our agents now at work are making from \$150 to \$600 a month clear, and this fact makes it safe for us to make our offer to all who are out of employment. Any agent that will give our business a thirty days' trial and fail to clear at least \$100 in this time, ABOVE ALL EXPENSES, can return all goods unsold to us and we will refund the money paid for them. Any agent or general agent who would like ten or more counties and work them through sub-agents for ninety days, and fail to clear at least \$750, ABOVE ALL EXPENSES, can return all unsold and get their money back. No other employer of agents ever dared to make such offers, nor would we if we did not know that we have agents now making more than double the amount we guaranteed; and but two sales a day would give a profit of over \$125 a month, and that one of our agents took eighteen orders in one day. Our large descriptive circulars explain our offer fully, and these we wish to send to every one out of employment who will send us three one-cent stamps for postage. Send at once and secure the agency in time for the boom, and go to work on the terms named in our extraordinary offer. We would like to have the address of all the agents, sewing machine solicitors, and carpenters in the country, and ask any reader of this paper who reads this offer, to send us at once the name and address of all such they know. Address at once, or you will lose the best chance ever offered to those out of employment to make money. RENNER MANUFACTURING CO., 116 Smithfield St., Pittsburg, Pa.

S. F. Chapter of Architects.

OWING to the inclement state of the weather, but few members were present at the regular meeting of the Chapter on the 6th inst. No business was transacted. The next meeting will occur Friday, December 4, when it is hoped a goodly number will be present.

Fresh vegetables are so common here, and can be had so cheaply, that they actually become "monotonous," and hardly cause remark. All the year round the Chinese vegetable peddlers manage to raise them, and four or five crops in the same year is nothing unusual. Our Eastern friends can come here any time in the winter and find fresh vegetables on the tables, which they are only accustomed to see in the hot summer months.—*Rural Californian*.

Don't Fail to Write.

SHOULD this paper be received by any subscriber who does not want it, or beyond the time he intends to pay for it, let him not fail to write us direct to stop it. A postal card (costing him one cent only) will suffice. We will not knowingly send the paper to any one who does not wish it, but if it is continued, through the failure of the subscriber to notify us to discontinue it, or some irresponsible party requested to stop it, we shall positively demand payment for the time it is sent.

MASONS' AND BUILDERS' EXCHANGE OF SAN FRANCISCO Room 11, 314 Montgomery St.

BELOW will be found a list of the members composing this Exchange. Boxes are provided for each member, so that architects, owners, or others desiring the services of any particular member, or those having boxes who are not members, and yet whose business is directly connected with that of the Exchange, can readily secure the attendance of the party sought, by leaving a note in the respective boxes. BRADY, O. E., President, 822 Valencia St., Box 22. BUTLER, THOMAS, 593 Ash Ave., Treasurer. " 28. BOWERS, T. N., Oakland, 804 Castro St. " 49. BENDER, JACOB, 1009 Clay St. " 73. BECK, J., 10 Eleventh St. " 12. CAIN, R. K., 213 Page St. " 61. CALVERT, JOHN, 812 Hyde St. " 16. COX, JOHN, 608 Jones St. " 18. CLAWSON, L. E., 129 Oak St. " 2. DUNBAR, WM., 27 Eleventh St. " 14. DOWNS, JOHN, 269 Minna St. " 18. DUNPHY, ED., 1006 Bryant St. " 34. FERRIS, CRAWFORD, 9 Bourbon St. " 20. GLENN, JAS., 432 Clementina St. " 57. HANAVAN, JOHN H., 1711 Jessie St. " 15. HOCK, T., 422 Golden Gate Ave. " 60. HOFF, J., 516 Kearny St. " 6. HIGGINS, ROBERT, 1724 Jessie St. " 13. HUGHES, JOHN, 310 Seventeenth St. " 21. JORDAN, D., 911 Webster St. " 59. KNEEDLER, G. W., 1013 Vallejo St. " 51. KINCAID, J. E., 2219 Pacific Ave. " 45. LIEBERT, J. G., 330 Oak St. " 32. LOANE, F. M., 1512 Golden Gate Ave. " 38. MITCHELL, ROBERT, 807 Turk St. " 26. MCCARTHY, JOHN, 2509 Folsom St. " 7. MCGOWAN, MATT., 614 Linden Ave. " 17. McDERMOTT, JOHN, 124 10th St. " 33. MCGUIRE, JOHN, 212 Grove St. " 74. MULCAHY, JAS., 612 Larkin St. " 33. NAGLE, GEO. D., 427 Montgomery St. " 24. O'CONNOR, J. J., 648 Minna St. " 19. O'BRIEN, D. J., 323 Dupont St. " 31. O'SULLIVAN, F., 432 9th St. " 35. RICHARDSON, GEO., 513 Ellis St. " 39. RICHARDSON, M. B., 624 Shotwell St. " 1. RILEY, J. F., 166 Perry St., Secretary. " 38. ROBERTS, S. N., 54 3d St. " 55. STEVENS, W. E., cor. Larkin and Market Sts. " 46. SCHOENMAKER, C., 323 Chestnut St. " 62. WAGNER, J., Potrero Ave. bet. 22d & 23d Sts. " 3. WORRELL, C. R., 888 17th St. " 5. WATERSON, G. T., 638 Market St. " 64. YOUNG, LEWIS " 49.

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RALSTON, H. & J., Iron-men & House-smiths, Box 78. LEWELLYN, R., Columbia Foundry. " 77. PENDERGAST, THOS., Howard Iron Works. " 72. WESTERN IRON WORKS. " 69.

STONE.

SCHALICKE, F. W., Patent Stone. Box 75. SOMERVILLE, W. S., Granolithic Paving Co. " 55. PETERSON, H. M., Sand and Gravel. " 63. RICHARDSON, M. B., Concrete. " 1.

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ROBERTS & DAVIS, Sacramento Brick. Box 36. REMILLARD BRICK CO. " 23. PATENT BRICK CO. " 29. PETERSON, T. W. & Co., San Jose, Brick Co. " 68.

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MISCELLANEOUS.

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Staining Wood.

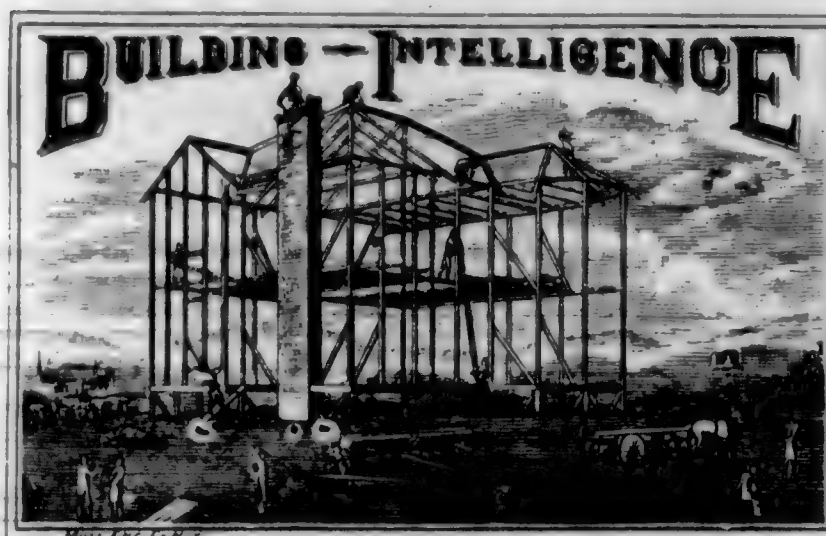
On staining wood a writer in an exchange gives the following directions:—

A good mahogany color may be had by dissolving maroon lake in water, adding a piece of potash about as large as a walnut to a quart of water, plenty of the color. This will give a good mahogany imitation on any wood and can be used to darken the mahogany if so desired. Oak or ash may be stained brown by using linseed oil and benzine half and half, and burnt umber or Vandyke brown incorporated with this. Maple can be stained green-gray by using copperas in water; oak will also be changed to a dark-green blue through the same agency, the effect on ash being various shades of olive green. Ammonia applied to oak produces the bronze olive tint now used so much by architects. Staining by the fumes of ammonia results in all shades from light olive to the rich, deep brown of extreme age. This method is considered the best for imparting to oak or mahogany the appearance of age, and for those wishing to avail themselves of an easy, clean, and certain means of gaining the result, fumigating offers no serious obstacle to its accomplishment, the articles necessary being easy of acquirement and at small expense.

Procure for your use a box sufficiently large to receive the article; any well-made packing-box will be suitable, providing the joints or seams are close. Next get some strong full-strength liquid ammonia, not the diluted article of the druggist, pour some in a shallow receptacle—such, for instance, as a deep plate—place this in the bottom of the box, so that the fumes will rise and surround the object to be stained; close the box securely, so that the fumes will be confined as much as possible. When the article is small, of course the box need not be large—the smaller the better, for then you will not require so much ammonia. You can see how the staining progresses by wetting a portion from time to time; otherwise the change of color would not be perceptible. All that now is necessary is to leave the ammonia to do the work, remembering that the longer the exposure the darker the hue will be.

ABOUT SCREWS.—In an article on the manufacture of screws in Rhode Island the *Providence Journal* says: "It is interesting to note that, while the manufacture of wood screws probably originated in Westphalia, Germany, and was subsequently carried on in Eastern France and England before its introduction into this country, American inventors have supplied the machinery that is now universally employed. The popular feeling that the gimlet-point screw is a modern invention is erroneous. The American Screw Company have in their possession sample cards of French screws, pointed, though not so perfectly made as at present, which were brought from France early in the present century; and from an old piano now at Northampton, made about the year 1750, screws have been taken showing the same feature. Patents have been issued on gimlet-pointed screws, but they covered only a peculiar form of point. The gimlet is said to have been invented by Daedalus, a Greek.

Shavings and Saw-dust. \$1.50
Lumberman's Hand-Book. 2.00
Practical Geometry. 1.00
Architects' Companion. 2.50
Plaster, How to Make It. 1.00



A
Alabama, cor. Twenty-fifth
Catholic Church.
O. Rev. P. Casey.
A. J. Finch.
C. J. Bin-t; J. Wagner.
brick work.
\$24,500.

B
Bryant, nr. Seventh. Two-
story frame.
O. G. Fink.
C. J. Kinsman.
\$3,000.
Bryant, cor. Dora. Two-
story frame.
O. and B. J. H. Worden.
Day's work.
\$6,000.
Bush, nr. Scott. Two-story
frame.
O. G. Edward.
C. N. W. Stecker.
\$2,000.
Bush, nr. Lyon. One and
one-half story frame.
O. and B. D. F. Mc
Graw.
Day's work.
\$1,500.
Baker, nr. Bush. Addi-
tions.
O. S. Edmonds.
C. D. F. McGraw.
\$1,000.
Bush, bet. Devisadero and
Boedrick. Three one-story
frames.
O. S. Gilmore.
C. J. Drury.
\$6,000.
Bush, bet. Mason and Tay-
lor. Additions.
O. W. S. Gage.
A. H. C. Macy.
C. G. R. Lang.
\$8,000.
Battery, bet. Pine and
Bush. Additions.
A. McDougal & Son.
C. A. G. Fitzpatrick.
\$11,000.
Bartlett, nr. Twenty-se-
cond. Alterations.
O. B. Curbaz.
A. H. Gellfuss.
C. W. Plums.
\$1,000.
Bartlett, nr. Twenty-first.
One-story frame.
O. N. W. Cole.
A. G. H. Miller.
Day's work.
\$3,000.

C
Clay, bet. Scott and Devis-
adero. Two-story frame.
O. E. W. Ferguson.
A. Eisen & Pierce.
C. W. H. Whilby.
\$400.
California, bet. Pierce and
Steiner. Two-story stable.
O. H. Schroder.
A. J. Marquis.
Day's work.
\$600.
Cumberland, nr. Nine-
teenth. Additions.
O. J. T. Swift.
Day's work.
\$1,000.
California, bet. Fillmore
and Steiner. Additions.
O. St. Paul's Episcopal
Church.
A. Pierce & Hamilton.
C. J. H. McKay.
\$2,000.
California, cor. Webster.
Five two-story frames.
O. and B. Hinkle Bros.
Day's work.
\$17,500.

**Church, cor. Duncan. Two-
story frame.
O. H. McGuire.
A. M. J. Welch.
C. M. Loftus.
\$2,800.**

D
Dolores, nr. Twenty-third.
One-story frame.
O. A. McNab.
C. F. W. Kern.
\$2,500.
Dolores, nr. Twenty-third.
Additions.
O. J. Wall.
Day's work.
\$800.

E
Eighth, cor. Harrison. One-
story frame.
O. Thos. L. Kaen.
C. Thos. Merry.
\$600.
Eleventh, bet. Natoma and
Howard. One-story frame.
A. F. Rash.
C. J. McCann.
\$1,500.
Eleventh, cor. Minna. Al-
terations.
O. and B. P. Connell.
Day's work.
\$1,200.
Eureka, bet. Eighteenth
and Nineteenth. Two one-
story frames.
O. and B. P. O'Ruke.
Day's work.
\$1,600.

F
Fillmore, bet. Sutter and
Post. Two-story frame.
O. B. Bates.
A. S. & J. C. Newsom.
C. J. Rehman.
\$4,000.
Fifteenth, nr. Noe. Frame
stable.
O. J. J. McDonald.
Day's work.
\$800.
First, cor. Harrison. Two
two-story frames.
O. and B. W. Keenan.
Day's work.
\$2,400.
Fourth, cor. Bryant. Three-
story frame.
O. A. H. Liebenburg.
A. J. Lenzen & Son.
C. A. Washburn.
\$4,000.
Fifteenth, cor. Church. Ad-
ditions.
O. J. W. Hammerton.
C. S. McDuffee.
\$750.
Fair Oaks, bet. Eighteenth
and Nineteenth. Two-story
frame.
O. W. Dunlap.
A. Schmidt & Havens.
C. D. B. Spangler.
\$2,700.
Filbert, nr. Jones. Two-
story frame.
O. R. Williams.
C. A. H. Taylor.
\$3,000.

G
Guerrero, nr. Clinton Park.
Two-story frame.
O. A. Hansen.
C. C. E. Dunshee.
\$2,500.
Gregory, nr. Second. Two-
story frame.
O. P. Lastrange.
Day's work.
\$1,000.
Guerrero, nr. Twenty-
fifth. Two-story frame barn.
O. R. Gray.
Day's work.
\$750.

H
Hyde, No. 814. Additions.
O. J. H. A. Folkers.
A. Schmidt & Havens.
C. Connelly & Beards-
lee.
\$3,000.
Haight, cor. Steiner. Two-
story frame.
O. J. W. Winter.
A. J. Gash.
C. J. L. Binet.
\$5,000.
Hattie, bet. Seventeenth
and Eighteenth. Two-story
frame.
O. J. Buckley.
Day's work.
\$3,000.
Haight, nr. Lott. One-story
frame.
A. R. A. Vanc.
C. G. R. Lang.
\$2,700.
Hunt, between Third and
Fourth. Two-story frame.
O. R. Surifer.
A. M. P. Schetal.
C. L. D. Frachete.
\$2,800.
Howard, bet. First and
Second. Three-story frame.
O. J. Burke.
A. W. C. Jordan.
C. C. Doherty.
\$4,500.

I
Jackson, bet. Van Ness and
Park. Additions.
O. Capt. Hanlon.
C. Thos. J. O'Brien.
\$1,500.

J
Liberty, near Guerrero.
Two-story frame.
O. H. Gilmore.
C. G. Lang.
\$4,000.
Langdon, nr. Bryant. Ad-
ditions.
O. T. McBride.
Day's work.
\$800.
Lott, cor. Turk. One-story
cottage.
O. C. Lutz.
A. Geo. H. Miller.
C. A. N. Nelson.
\$1,800.
Linden Avenue, nr. Bu-
chanan. One and one-half-
story frame.
O. M. Williams.
A. Townsend & Wyne-
ken.
C. Geo. Hussey.
\$1,300.
Lombard, bet. Jones and
Leavenworth. Two-story
frame.
O. Miss Ella L. McCarthy.
A. George H. Miller.
C. John Doherty.
\$6,000.

M
Mason, nr. Broadway. Al-
terations.
O. W. McCoy.
A. T. D. & J. J. Newsom.
C. R. Beal.
\$3,500.
Mission, bet. Sixteenth and
Seventeenth. Additions.
O. Joe Beane.
C. G. R. Lang.
\$1,500.
Mission, opp. St. Mary's
College. Two-story frame.
O. J. E. Rising.
A. M. J. Welch.
C. A. Klahn.
\$5,000.
Mission, nr. Twenty-first.
Two-story frame.
O. Maier & Unrath.
C. J. Bamber.
\$4,000.
Mission, nr. New Mont-
gomery. Four-story brick.
O. H. Warden.
A. Pissis & Moore.
C. S. T. French; brick
work, G. Richardson.
\$22,000.
Market, nr. Sanchez. Two-
story frame.
O. R. B. Page.
A. Geo. H. Miller.
C. Doyle & Son.
\$3,600.

N
N Street, bet. Fifteenth
and Sixteenth Avenue, So.
San Francisco. Frame
Roman Catholic Church.
O. Rev. T. Fitzpatrick.
A. John J. Clark.
C. J. G. Adams.
\$20,000.
Noe, nr. Eighteenth. One-
story frame.
O. W. M. Granahan.
Day's work.
\$1,500.
Noe, bet. Fifteenth and Six-
teenth. One-story frame.
O. T. C. Conny.
A. Schmidt & Havens.
C. R. P. Traxler.
\$2,000.

O
O'Farrell, bet. Fillmore
and Steiner. Two-story
frame.
O. A. Levy.
A. McDougal & Son.
C. R. Currie.
\$800.
Octavia, nr. Union. One-
story frame.
O. W. Eastman.
A. S. & J. C. Newsom.
C. D. B. Spangler.
\$2,500.
Octavia, nr. Post. Two-
story frame.
O. C. Otten.
A. T. J. Welch.
C. J. W. Fish.
\$3,000.

P
Plymouth, nr. Mission.
One-story frame.
O. Andrew Eckert.
Day's work.
\$1,700.
Page, cor. Buchanan. Three-
story frame.
O. A. W. Scott.
A. C. Day.
C. A. Flood.
\$22,000.

Q
Quinn, nr. Valencia. Two-
story frame cottage.
O. Jas. Humphreys.
Day's work.
\$1,000.

R
Richland Avenue, nr.
Mission. One-story frame.
O. J. Drew.
C. J. L. McLaughlin.
\$900.

S
Sixteenth, nr. Castro. One-
story frame.
O. and B. J. Conlan.
\$1,000.
Steiner, bet. California and
Pine. Two-story frame.
O. Mrs. Mary Eaton.
A. T. D. & J. J. Newsom.
C. R. Beal.
\$5,000.
Seventeenth, nr. Collins-
wood. One-story frame.
O. F. Sears.
C. E. M. Hunter.
\$1,800.
Sanchez, nr. Ford. One-
story frame.
O. H. Echelmier.
A. Salfeld & John.
C. J. Klein.
\$2,500.
Shotwell, bet. Seventeenth
and Eighteenth. One-story
frame.
O. J. W. Williams.
C. A. Comack.
\$1,000.
Sixteenth, nr. Castro. One-
story frame.
O. W. Griffin.
Day's work.
\$1,500.
Sixteenth, near Sanchez.
Two-story frame.
O. F. W. Flatner.
C. C. Christy.
\$4,000.
Sanchez, near Sixteenth.
Two-story frame.
O. N. Atkinson.
Day's work.
\$3,000.

**Scott, bet. Bush and Sutter.
Two-story frame.
O. Mrs. H. M. Solomons.
A. W. G. Copeland.
C. Treadwell & Thomp-
son.
\$3,000.**

**Steiner, nr. Turk. Two-
story frame.
O. S. R. Bitcher.
A. Townsend & Wyne-
ken.
C. R. Chandler.
\$2,400.**

**Steiner, nr. Fulton. Two-
story frame.
O. A. Wissel.
A. A. C. Lutgens.
C. C. Mason.
\$4,500.**

T
Tennessee, near Solano.
Two-story frame.
O. F. Lester.
C. C. E. Dunshee.
\$3,500.
Tenth Avenue, nr. Point
Lobos Avenue. Two-story
frame.
O. P. H. Loul.
A. F. Hillert.
C. C. Fisher.
\$2,000.
Twenty-first, bet. Mission
and Capp. Two two-story
frames.
O. C. H. Lienthal.
A. H. Geil uss.
C. F. Klatt.
\$3,000.

**Third, near King. Boat
house.
O. South End Boat Club.
A. A. C. Lutgens.
C. E. & F. J. Owens.
\$1,700.**

**Townsend, bet. Fourth
and Fifth. Brick ware-
house.
O. Whittier, Fuller & Co.
A. Wright & Sanders.
C. B. Mitchell.
\$10,000.**

**Twenty-third, bet. Shot-
well and Howard. One-story
frame.
O. and B. J. D. Rogers.
\$1,800.**

**Treat Avenue, nr. Twen-
ty-fourth. Two-story frame.
O. C. Wheeling.
A. W. Mosier.
C. B. Pfarrer.
\$2,600.**

**Twenty-seventh, corner
Church. Alterations.
O. J. F. Musaner.
Day's work.
\$700.**

**Twenty-seventh, near
Church. Alterations.
O. A. Cash.
Day's work.
\$1,000.**

**York, cor. Twentieth. One-
story frame.
O. S. Lang.
Day's work.
\$1,000.**

OAKLAND.
MARKET, bet. Fourth and Fifth—1-story fr
dwel; cost, \$1,500; o, W. Harrington; c, M.
Jackson.
FOURTH, bet. Jefferson and Grove—1-story fr
dwel; cost, \$1,600; o, W. Sagehorn; a, Chas.
Mau; c, J. G. Dorrell.
MARKET, nr. Twentieth—1-story ctg; cost, \$1,300;
o, H. Renton; c, J. G. Dorrell.
FOURTH, cor. Jefferson—2 1-story ctgs; cost,
\$3,000; o, D. Moran; c, D. Markel.
FIFTH, bet. Broadway and Franklin—2 2-story
ctgs; cost, \$2,500; o, Barnett Bros.; c, D. Markel.
TWELFTH, cor. Adeline—1-story fr dwel; cost,
\$2,500; o, Mrs. Durst; a, Chas. Mau; c, A. Herbst.
TENTH, se cor. Center—Addition; cost, \$1,200;
o, Dr. W. M. Brown; c, J. C. Johnson.
CHESTNUT, w s, bet. Fourteenth and Sixteenth—
3 1-story fr dwells; cost, \$5,000; o, S. Carle; a,
Jas. Seadler; day's work.
EIGHTEENTH, ne cor. Chestnut—2-story fr
dwel; cost, \$5,000; o, Everett Nickerson; c,
Z. P. Nickerson.
FILBERT, e s, bet. Fourteenth and Sixteenth—2-
story fr dwel; cost, \$5,000; o, G. W. Babcock;
a, S. & J. C. Newsom; day's work.
FILBERT, w s, bet. Fourteenth and Sixteenth—2-
story fr dwel; cost, \$4,000; o, Dr. Pelton; a, W.
Davidson; c, E. Childs.

FILBERT, cor. Twelfth—1-story school house;
cost, \$3,500; o, Miss Horton; c, W. Whilbye.
THIRTEENTH, cor. Washington—3-story fr dwel;
cost, \$10,000; o, H. Matthews; a, O. Hansen; c,
H. J. Hansen.
SAN PABLO AVENUE, cor. Sixteenth—Additions;
cost, \$3,500; o, J. Garrint; c, W. A. Griffith.
SIXTH, bet. Broadway and Franklin—2-story fr
dwel; cost, \$4,000; o, W. Davis; c, W. A.
Griffith.
SIXTEENTH, nr. San Pablo ave—3 1-story ctgs;
cost, \$3,000; o, J. Garrint; c, Griffin & Griffith.
GROVE, nr. Fourteenth—2-story fr dwel; cost,
\$3,500; o, Mrs. L. H. Campbell; c, W. H.
Bailey.
SEWARD, cor. CAMPBELL—2-story fr convent;
cost, \$6,500; o, Father McNally; c, Maloney
& Shay.
HIGHLAND PARK—1-story fr dwel; cost, \$3,000;
o, J. Pinet; a, Dailey & Fraun; c, R. Stephens.

EAST OAKLAND.

TWENTY-FIRST, cor. Twenty-first ave—Addi-
tions; cost, \$300; o, George Wheeler; c, Farnham
& Hodge.
EAST TENTH, cor. Fourth ave—7 1-story and
bunt fr dwells; cost, \$10,000; o, G. C. Wooster;
c, Z. P. Nickerson.
THIRD AVENUE, cor. Tenth—Alterations and ad-
ditions; cost, \$10,000; o, California Jute Mill Co;
c, S. J. Hubb, carpenter work; Remillard Brick
Co., brick work.
EAST FOURTEENTH, nr. Thirteenth ave—3 1-
story fr dwells; cost, \$2,300; o and b, Louis
Dulcich.
FIFTEENTH, nr. Sixteenth ave—Catholic Church;
cost, \$20,000; o, Catholic Church Parish; a, B. J.
Clunch; c, G. A. Embury.
FOURTEENTH, bet. Sixteenth and Seventeenth
ave—1-story fr dwel; cost, \$1,000; o, Thos.
O'Donnell; c, G. W. Palmer.
FOURTEENTH, bet. Seventeenth and Eighteenth
ave—2-story fr dwel; cost, \$2,100; o, Brown &
Schmidt; c, A. Herbst.
THIRD AVENUE, nr. Twelfth—1-story fr dwel;
cost, \$1,800; o, G. Calberg; a, D. Gallagher; c,
Farnham & Hodge.
NINTH AVENUE, cor. Eleventh—4 1-story
fr dwel; cost, \$6,500; o, J. F. Cummings; c,
Farnham & Hodge.

ALAMEDA.

PARK AVENUE, nr. Encinal—1-story fr dwel;
cost, \$1,500; o, Dr. Bronson; c, Farnham &
Hodge.
SANTACLAARA AVENUE, s s, nr. Walnut—2-story
fr dwel; cost, \$2,000; o, Capt. Thompson; c,
C. Foster.
SANTA CLARA AVENUE, n s, nr. Walnut—1-
story fr dwel; cost, \$3,000; o, A. Queenshoffer;
c, P. Christensen.
SANTA CLARA AVENUE, n s, nr. Willow—2-
story fr dwel; cost, \$6,000; o and b, Reed &
Ranlett.
CHESTNUT, nr. Railroad ave—2-story fr dwel;
cost, \$3,000; o, E. Gerald; c, J. M. Reynolds.
BENTON, w s, nr. Railroad ave—2-story fr dwel;
cost, \$2,000; o and b, F. A. Blanchard.

BENTON, w s, nr. Railroad ave—1-story fr dwel;
cost, \$1,000; o and b, J. T. McKenney.

BERKELEY.

SHATTUCK AVENUE, nr. R. R. depot—2 1-
story fr dwells; cost, \$2,000; o, M. A. Barker; c,
I. A. Boynton.
BANCROFT WAY, nr. Harmon's Seminary—2-
story fr dwel; cost, \$4,000; o, W. Keith; a,
W. W. Goodrich; c, H. McCrackin.
BANCROFT WAY—1-story fr dwel; cost, \$1,400;
o, H. Kelley; c, A. Kachieschang.

NORTH BERKELEY.

BERRYMAN'S TRACT—Fr school house; cost,
\$2,500; o, H. Berryman; a, O. Hansen; day's
work.
BERRYMAN'S TRACT—1-story fr dwel; cost,
\$2,900; o, Mrs. Cheney; a, O. Hansen; c, H. J.
Hansen.

SACRAMENTO.

J STREET, bet. Eighth and Ninth—3-story and
basement hotel; cost, \$14,650; o, A. Coolot; a,
N. D. Goodell; c, Siller Bros.
G STREET, bet. Eighteenth and Nineteenth—Im-
provements; cost, \$500; o, C. H. Gilman; a, N.
D. Goodell; c, C. Ruggles.

SAN JOSE.

SECOND, cor. Williams—2 2-story fr dwells; cost,
\$4,900; o, Martin Luther; a, Theodore Lenzen;
c, A. C. Mathewson.
THIRD, cor. San Salvador—1-story fr dwel, br
basement; cost, \$5,000; c, E. A. Van Dalsen.
1-story fr in the suburbs; cost, \$2,600; o, S. F.
Lieb; a, Jacob Lenzen & Son.

SOQUEL.

2-story fr dwel; cost, \$3,000; o, A. Getzschman;
a, Theodore Lenzen.

STOCKTON.

Cost, \$10,000; o, California Paper Co.; a, C.
Day; c, A. Flood.

SAN PABLO STATION.

2 1-story ctgs; cost, \$3,000; o, DeRome & White;
a, S. & J. C. Newsom; c, Wilcox & Graves.
1-story ctg; cost, \$1,600; o, J. Latimer; c, I. A.
Boynton.

SAN RAFAEL.

2-story fr dwel; cost, \$7,000; o, C. Fish; a, C.
Giddes; c, English & Gore.
2-story fr dwel; cost, \$6,000; o, Mr. Page; a, C.
Day; c, Chisholm.

NAPA.

2-story fr dwel; cost, \$4,000; o, Senator J. F.
Miller; a, J. Marquis; day's work.

WOODLAND.

MAIN—3 2-story br stores; cost, \$10,500; o, Dr.
White; a, T. J. Welch; c, C. B. Sumner & D. S.
Scott.

MAIN, cor. Elm—2-story br store; cost, \$3,000; o,
Prior & Gibson; c, Glenn & White.
FIRST—1-story fr dwel; cost, \$2,000; o, C. W.
Thomas; a and b, W. H. Carson.

FIRST—1-story fr dwel; cost, \$2,000; o, J. M.
Miller; c, C. C. Keedy.
LINCOLN AVENUE—1-story fr improvement;
cost, \$1,000; o, Irving Porter; c, Glenn & White.
LINCOLN AVENUE—1-story fr dwel; cost, \$1-
000; o, C. M. Foster; day's work.

GRAFTON—1-story fr dwel; cost, \$1,000; o,
Benjamin Hennigen; b, B. E. Jackson.
WESCOTT—1-story fr dwel; cost, \$1,500; o,
Thomas Boots; day's work.

EAST AVENUE—1-story fr dwel; cost, \$2,000;
o, Napoleon Cox; b, S. Clevenger.

EAST AVENUE—1 1-story br stores and 12-story
br store; cost, \$5,500; o and c, W. H. Winnie.
1-story fr dwel; cost, \$1,000; o, John Murry;
b, Charles Roberts.

1-story fr dwel; cost, \$1,000; o, John Thompson;
day's work.

2-story fr dwel; cost, \$1,500; o, Thomas Lange-
nour; c, Glenn & White.

1-story fr dwel; cost, \$1,000; o, John Rupert;
day's work.

MONTICELLO.

1-story fr school house; cost, \$1,600; c, Richie &
Ward.

BLACK'S STATION.

1-story fr dwel; cost, \$2,100; o, J. F. Dillon; a,
W. H. Carson; c, Glenn & White.

1-story fr dwel; cost, \$1,500; o, E. A. Rusing;
c, M. Cummings.

CACHEVILLE.

2-story fr dwel; cost, \$4,500; o, A. Griffith;
a and c, W. H. Winne.

1-story fr dwel; cost, \$3,500; o, J. D. Reid; day's
work.

DUNNIGAN.

2-story fr dwel; cost, \$12,000; o, J. N. Decker;
a, Jacob S. Morris; c, Welch & Morris.

DAVISVILLE.

2-story fr dry house and packing establishment;
cost, \$2,500; o, Eugene Gould; day's work.

1-story fr dwel; cost, \$1,400; o, John Rowe;
day's work.

1-story fr dwel; cost, \$1,200; o and b, Chris
Branagan.

MADISON.

2-story fr carriage house; cost, \$1,000; o, Ed.
Archer; c, Charles Reardon.

KNIGHT'S LANDING.

2-story fr dwel; cost, \$4,000; o, Peter Ossen-
bruggen; day's work.

2-story br dwel; cost, \$5,000; o, William Ogden;
day's work.

WINTERS.

MAIN—1-story br store; cost, \$2,500; o, Henry
Crane; day's work.

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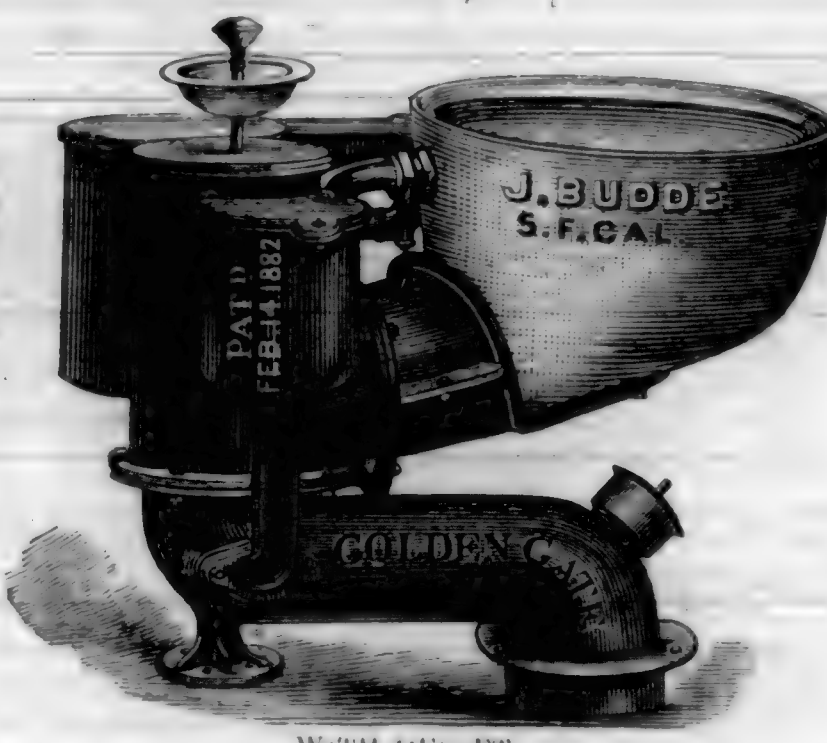
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WITH TRAP.



WITH OFFSET.

This Closet is the best of its kind, having been so far constructed, it has the following advantages:—

1. It has a simple, strong valve, suitable for any pressure.
2. It has a real sanitary overflow, a copper float attached to a bell of the same metal resting on face of the brass overflow pipe, operated by the rising of the water in the closets above its level, thus absolutely preventing any escape of sewer gas, even the closets being without water.
3. It has no dead corner, consequently no foul water will be left in the closet after the lifting of the handle. A constant rush out of the flood chambers will keep the closet and trap perfectly clean.

This Closet takes the lead; it has been sold since February, 1885, in large quantities to the best satisfaction.

THE COMBINATION HOPPER.

This hopper is constructed to take 2-inch pipes, one to the right and one to the left, and a 4-inch lead in the center. It has a movable strainer on top to take the surface water. The lower part of the hopper with side outlet is to be connected with the sewer pipe, either right or left. The upper part is independent from the lower, and is made to swivel, therefore it will suit either position of pipe. This hopper can be used only for surface, for waste, or for leader; either inlet will be stopped up with iron caps if so desired.

PACIFIC PAN CLOSET.

This Closet is superior to all others, every working part and bolt being made of brass, closet and valve extra heavy casting. Particular attention is called to No. 4. This Closet has an oval basin fastened to the cover by brass clamps and bolts. No breaking of putty joints required to renew a pan. The loosening of two large brass nuts will separate cover with basin from the receiver. It has a heavy nickel plated cup and pull and solid brass rod.

These Closets have been in use since February, 1883. Plumbers and wholesale dealers give them the best recommendation.

Square Slop Hopper. Square Waste Hopper. Basket Hopper.
Basket Hoppers are made in one piece with Movable Strainer.

Side View, Combination Hopper.

No. 126 FIRST STREET. SAN FRANCISCO, CAL.



No. 4.

The California Architect and Building News.

VOLUME VI.
NUMBER 12.

SAN FRANCISCO, DECEMBER, 1885.

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Single Copies, 20 Cents.

THE CALIFORNIA ARCHITECT AND BUILDING NEWS.

PUBLISHED on the 15th of EACH MONTH

San Francisco Architectural Publishing Co.,

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MISCELLANEOUS.

Strength of Brick Walls; The Boston Society of Architects; A Needed Remodeling Commission; Not Published in Personal Interest; German and American Tools; One Chinaman—Three Whites; Fall of a Solid Stone Staircase; Ancient Cisterns; Cement; Porcelain Oil Painting; A Singular Building.

Annual Building Report for 1885.

In the accompanying review for the year's transactions in building operations, ending with the present issue, will be found a full, corrected summary for the twelve months last past. Although it would have been more pleasing to be able to confirm and verify each separate monthly report as made, yet, finding some discrepancies in figures, we prefer correction, so as to make the yearly statement from December 15, 1884, to December 15, 1885, as nearly faultless as possible. Our purpose is to be correct in every representation made, and departures from this will in all cases be unintentional. Sometimes the information received is misleading; others, whose special affairs are sought to be represented, have to be relied upon for facts, and in some cases erroneous statements are made. But all possible care will be exercised to equalize this, and present reliable reports each month.

Report for month ending December 15, 1885, is as follows: 66 frames, value, \$176,000; 14 alterations, value, \$23,830. No. of buildings, 80; total value, \$199,830. The above report is the smallest in amount made during 1885, and \$238,915 less than reported for the corresponding month of last year. But the totals for the entire year show a gain of \$741,192, as follows, by the corrected figures for this year:—

First six months in 1885, ending June 15	\$4,267,375
Second six months in 1885, ending December 15	2,776,624

Total for twelve months	\$7,043,999
Total for the twelve months of 1884	6,202,807

Gain in 1885	\$841,192
--------------	-----------

	FRAME BUILDINGS.	BRICK BUILDINGS.	ALTERATIONS, ETC.	TOTAL BLD'GS.	TOTALS MONTHLY.
January	62 \$ 236,850	2 \$ 314,000	9 \$ 39,300	73	\$ 590,150
February	102 433,400	7 141,000	12 34,450	121	608,850
March	84 318,600	4 433,000	9 17,150	97	768,750
Totals, 1st quarter	248 \$ 988,850	13 \$ 888,000	30 \$ 90,900	291	\$1,967,750
April	148 \$ 651,450	2 \$ 430,000	18 \$ 50,000	168	\$1,131,450
May	129 510,715	2 10,900	16 44,650	147	566,265
June	126 463,100	2 72,000	20 60,810	148	601,910
Totals, 2d quarter	403 \$1,631,265	6 \$512,900	54 \$155,460	463	\$2,299,625
Total for first six months					1,967,750
July	74 \$ 281,310	2 \$110,000	20 \$ 66,100	96	\$4,267,375
August	75 263,650	3 80,000	17 46,500	95	\$ 457,110
September	119 528,650	7 143,500	43 113,550	169	395,150
Totals, 3d quarter	268 \$1,078,610	12 \$333,500	80 \$226,150	360	\$1,638,260
October	113 \$ 407,539	4 \$100,200	40 \$ 71,375	157	\$ 579,114
November	81 280,650	3 38,000	19 40,750	106	359,400
December	66 176,000	.. ..	14 23,850	80	199,850
Totals 4th quarter	263 \$ 864,189	7 \$138,200	73 \$135,975	343	\$1,138,364
Total for second six months					1,638,260
" first six months					\$2,776,624
" for twelve months					4,267,375
					\$7,043,999

The foregoing tabulation, as corrective of the monthly reports, shows as follows:—

	MONTHLY REPORTS AS CORRECTED.		MONTHLY REPORTS AS PUBLISHED.		IN EXCESS OF FACTS.		LESS THAN FACTS.	
	No.		No.		No.		N.	
January	73	\$ 590,150	73	\$ 602,585	.....	\$ 12,435	.....	\$ .....
February	121	608,850	121	660,397	.....	51,547	.....	.....
March	97	768,750	94	806,279	.....	37,529	3	.....
April	168	1,131,450	178	1,221,045	10	89,595	.....	.....
May	147	566,265	127	577,843	.....	11,578	20	.....
June	148	601,910	148	588,410	.....	.....	.....	13,500
July	96	457,410	99	412,050	3	.....	.....	45,360
August	95	395,150	83	347,600	.....	.....	12	47,550
September	169	785,700	169	746,100	.....	.....	.....	39,600
October	157	579,114	156	582,914	.....	3,800	1	.....
November	106	359,400	107	365,700	.....	6,300	1	.....
December	80	199,850	80	199,850	.....	.....	.....	.....

NUMBER OF ENGAGEMENTS FOR 1885.	
1,182 Frame buildings.....	\$4,562,914
38 Brick ".....	1,872,600
237 Alterations.....	608,485
1,457.....	\$7,043,999
NUMBER OF ENGAGEMENTS FOR 1884.	
905 Frames.....	\$4,112,201
25 Brick.....	1,536,645
197 Alterations.....	553,961

1,127.....	\$6,202,807
IN 1883.	
803 Engagements.....	\$5,261,689
IN 1882.	
785 Engagements.....	\$3,896,212
IN 1881.	
533 Engagements.....	\$3,790,732
IN 1880.	
397 Engagements.....	\$1,754,435

By the foregoing it will be noticed that in the five months prior to the June issue, the reports as published overstated the actual engagements \$202,684; the four months next following shows a discrepancy, less than actual engagements, of \$146,010, and in October and November exceeds to the amount of \$10,100. But deducting the under from the over statement the error balances amounts to an average of less than \$4,722 per month, in the correct gross sum of \$7,043,999.

In the future we hope to, and shall use all due and reasonable care to avoid error of statement in building reports, and in all other connections.

Building Report for 1886.

It being the intention to issue this Journal, on and after January, 1886, on the fifth day of each month, instead of the fifteenth; and the building report in the present issue, including all information in this department, up to the tenth of the present month, the January number will contain the building intelligence of but two-thirds of a month, instead of a full month. Thereafter, the information will be special to each month, from first to last day, instead of from fifteenth to fifteenth.

The great error of overstating and exaggerating for effect sake, will be carefully guarded against. No good can come from perversion of facts in this or any other connection, nor is it honest journalism to represent things to be, which have no existence in fact.

Mr. M. J. Marion will contribute articles to this Journal regularly, commencing with the January number. Mr. M. is extensively known upon this coast, in New York, and many of the Eastern cities, as a geometrician of marked skill and ability, and our readers may anticipate much that will be instructive and useful, particularly in the difficult problems involved in the construction of roofs, domes, groined arches, stair work, and the innumerable intricacies classified under the head of geometrical demonstrations.

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Strength of Brick Walls.

THE question of strength of brick walls is often discussed, and differences of opinions expressed. The following is one of the rules given: For first-class buildings, with good workmanship, the general average should not exceed a greater number of feet in height than three times the thickness of wall in inches, and the length not to exceed double the height, without lateral supports of walls, buttresses, etc., as follows, for safety:—

THICKNESS.	SAFE HEIGHT.	LENGTH.
8½-inch walls.....	25 feet.....	50 feet
13 " ".....	40 ".....	80 "
17 " ".....	55 ".....	110 "
22 " ".....	66 ".....	130 "
26 " ".....	78 ".....	150 "

Where the lengths must exceed these proportions, as in depots, warehouses, etc., the thickness should be increased, or lateral braces instituted as frequently as practical.

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Building Superintendence. By T. M. Clark, published by J. R. Osgood & Co., Boston. A valuable work of 336 pages. Every builder and architect should have one in his library. Price, \$3.00.

San Francisco Chapter of Architects.

THE regular monthly meeting was held the 4th inst, President Curlett in the Chair, B. E. Henriksen, Secretary. After reading and approval of minutes, the Secretary presented the certificate of incorporation of the Chapter, duly signed by the Secretary of State, with the seal of the commonwealth affixed, and neatly framed.

Reports from the various committees were considered and acted upon. That having the matter of "fire ordinances" in hand was requested to proceed as rapidly as possible, as the subject is considered one of material importance, alike to architects and owners.

Mr. J. M. Curtis was elected Treasurer for the current year.

A circular from the Master Painters' Association was presented, and received with favor by all architects present.

A committee, consisting of Messrs. J. E. Wolfe, John Wright, B. E. Henriksen, Wm. Curlett, and J. B. Whittemore, was appointed to consider the unspeakably grand bequests of the honorable Senator, Leland Stanford, and report thereon.

A paper was then read by a member upon the lien law of California, in which was specially noticed the clause requiring the filing of all contracts with the County Recorder prior to the commencement of contemplated works. Its illegality, insufficiency for the purposes contemplated by the manipulations of the act; its immoral, unjust, and pernicious effects, were dwelt upon. The expressions of all present were in harmony with the sentiments of the paper read.

Mr. H. C. Macy was appointed by the Chair to lead the discussion at the January meeting of the Chapter, upon the subject of sewerage and drainage.

At a late hour the session ended, all present being well pleased with proceedings, the only regret being that more members were not present to reap the benefits of the occasion.

Building Improvements in New York.

THE Real Estate Record says: "By the end of the year 1885, about 3,400 houses will be finished or under way in this city (New York), the cost of which will be nearly \$46,000,000. In Brooklyn there are about 4,000 new structures, which will cost about \$20,000,000. In addition to these, about 12,000 houses, valued at not far from eighty millions, have been started during the year in localities adjacent to New York and Brooklyn, whose population does business in these cities."

Grimshaw on Saws, with Supplement, by Robert Grimshaw. A book of 278 pages, neat and clear in typographical execution, and full of facts and figures in relation to saws. The number and variety of its illustrations add greatly to its interest. It contains a large amount of valuable information. Thos. W. Hartley & Son, publishers' agents.

A Manual of Industrial Drawings for Carpenters and Other Wood-workers, by W. F. Decker, instructor in drawings in the University of Minnesota. Published by W. F. Comstock, N. Y. Price, \$2.00. Sent by mail free of postage to any part of the world. To be had at the office of this Journal at publishers' price. An excellent, practical book.

Not Guilty—Complaint Dismissed.

IN last issue of this Journal, the arrest of Messrs. Wright & Sanders, architects, for violation of the fire ordinance of San Francisco, was noticed, and the facts substantially stated. Since then the merits of the case have been tested before a jury, in Police Court No. 2, Messrs. Rix & Firth, contractors for furnishing the box girders in issue, being the defendants, which resulted in a verdict of not guilty, upon the following grounds:—

It was shown, first, that when the fire law, under which the arrests were made, was framed and made part of the city ordinances, the only plates easily obtainable in San Francisco for the manufacture of box girders were in lengths of ten to twelve feet each. Consequently, they had of necessity to be built and made with butt joints and laps. To compensate for this, the law was made to compel a diaphragm at each five feet, the ordinance making no provision for any substitution, even of a better kind; and the girders causing the arrests, although made of plates full length without piecing or lapping, were subject to the same technical regulations in their construction, i. e., diaphragms at each five feet. The ordinance also requires that "the riveting shall be done hot, and hammered [hence, hand riveted] to a proper conical head." The girders under arrest were hydraulic, riveted to cupped or button heads. And, it being shown that the riveting adopted was equally as good, if not in fact better than the conical heads, particularly as the only restriction in that respect is "proper conical heads," leaving the real strength value contingent upon the judgment of the maker, or the caprice of the fire department inspector, the jury considered the issue upon that point as insufficient to sustain the charge.

Secondly, it was shown that the girders in dispute were well made, with all the plate parts in full length without joints, and the diaphragms sufficient in size, spaces, and number for all practical purposes, and that the riveting, being done by hydraulic pressure, was better than hammered work by hand. The jury failed to realize more than an immaterial, technical violation of an ordinance which greatly needs change and amendment in this and numerous other particulars. A verdict of not guilty being rendered in the case named, the charge against Wright & Sanders, the architects, and the owner of the property, was dismissed.

When American establishments can furnish locomotives in Australia for \$2,000 each less than the price at which work not so satisfactory can be obtained in England, and in a much shorter time, as was recently done, our manufacturers certainly ought to be encouraged to compete actively for business in that great continent.—*Railway News.*

Shoppell's Modern Houses, issued quarterly, at \$1.00 per number, or \$3.00 per annum; 72 pages, 11x14 inches, well filled with plans and designs for suburban and country houses.

The Building Outlook for 1886.

MUCH interest is expressed in the probable building operations for the coming year. The closing monthly report for 1885 shows a large decrease as compared with the preceding month, but this fact is no criterion for judging the future.

The number of buildings erected within the last twelve months is shown to be large, and by many the falling off has been expected and prognosticated for months back. The decline cannot, however, be denominated as a "bad break," but a natural letting up—an easement for reflection and preparation, to be followed by a speedy revival of extensive operations.

Of course, no one can tell, nor approximate with any degree of certainty, the extent of future activities; but this can be stated as foreshadowing the probabilities of the future,—a splendid feeling of confidence and hope prevails in all directions. The timely rains, beautiful weather, encouraging prospects for abundant harvests, fair trade and traffic generally, the few houses and buildings to rent in desirable localities,—all serve to encourage large expectations for the future. Several large brick buildings are prominently talked of, and from probabilities almost reduced to certainties, we are justified in stating that the number of bricks in prospect to be laid in 1886 will double those used during the current year. There are also a sufficient number of plans for frame structures, now ready or preparing in architects' offices, to give a handsome commencement during the early months of the coming year.

Materials of all kinds are cheap—seldom, if ever, more so—with no present prospect of an early increase in prices. Labor is abundant, and contractors anxious for work. Although the number and gross amount of failures during the past year have been greater than should have been, they are far less than in some former years. But conditions in this particular are improving. Material men are scarcely as reckless as they used to be in encouraging unknown, untried, and doubtful parties. The responsibilities of contractors, as a class, is improving; as owners are realizing that the employment of reliable men is by far the better method, even at slight advance, which in the long run is true economy, as such a course insures better work and buildings, and often saves immediate coin, as work let to the refuse class often involves costs and outlays far greater than the difference in amount of bids between good and ungood contractors.

Whatever may be in store for us, to be developed as time rolls by, this one thing is eminently true,—that the spirit of great buoyancy prevails generally, and expressions of confidence in what is to be, are almost universal.

The Los Angeles "Herald" says that a large bed of choice potter's clay has been discovered in the Temescal Mountains, about sixteen miles from the California Southern Railroad.

A Needed Remodeling Commission.

IN view of the incompleteness and insufficiency of the present fire ordinances as affecting the construction of buildings in San Francisco, a board consisting of competent architects and civil and mechanical engineers, should be appointed by the Board of Supervisors, to prune and remodel the present, and provide an intelligent building law in harmony with the necessities involved in the erection of buildings in this city. Such a board ought to be able to prepare a very perfect code of ordinances, as all the principal Eastern cities are well provided in this regard—some of them of very recent date, and copies of such laws can be had to guide deliberations, and lead to a consummation entirely satisfactory to architects, property owners, and the fire department. We do not wish to be understood as seeking to reflect adversely upon the fire wardens, or the officials of the fire department, each and all of whom are doubtless performing their trusts and duties conscientiously, under the laws and ordinances as they now stand. But it is difficult for even good and honest officials to fulfill their duties satisfactorily, when the laws by which they are governed are defective, inexplicit, and insufficient. And the fact that the present ordinances are so, frequently gives rise to issues which might be provided for and regulated in a more perfect and comprehensive fire law.

PROSPEROUS INDICATIONS.—The copious rains that have fallen in California and adjacent States and Territories, since the 14th of November, have spread a general feeling of confidence in all directions; and among all classes, as by their coming, all doubts and fears as to a bountiful harvest have been dispelled, and predictions—perhaps the child of hope—are to the effect that the year 1886 will be one of very great prosperity. With nothing occurring to change the present outlook, it is fair to calculate on lively times for the incoming year. As a matter of course, with abundant harvests of cereals, fruits, and vintages, the building interests will be stimulated, and a continuance of brisk times is sure to follow.

Florence, the actor, tells the following concerning Morse: "I can remember," he said, "years and years ago, going to a dinner down in Fourteenth Street, given to Morse, the telegraph inventor. He was an elegant old gentleman, but when he got on his legs to talk he was awful long-winded. I had a friend with me. We listened to Morse's speech, while he predicted great things for electricity. I remember that he predicted, too, that some day men would be able to talk over the wires for distances of fifty miles, and that every ship that left harbor for an ocean voyage would be connected with the land by wires. When he got that far, my friend said, 'What rot,' and we went out. I have often remembered how foolish his talk sounded to me. Yet it has been all realized, except as regards ships at sea. I believe even that will come about some day."—*Electric Review.*

California Redwood in London.

THE (London) *Timber Trades Journal*, in commenting upon the growing scarcity of fine quality wood for high-class joinery work, and referring to "redwood in the Chicago market," among other things quotes from a contemporary:—

Chicago, a town of little note twenty years ago, has now become one of the largest cities of the Northwest; situated in the center of teeming forests and fertile plains, on the banks of the vast lakes and their tributaries, it became the great store-house for timber, and farm produce as well. The forests in its immediate vicinity soon became exhausted, but abundance of pine, spruce, and hemlock, with other varieties, continued, and still continue to pour down the various rivers of which it forms the connecting point. Yellow pine, for many years, and still, an abundant commodity, was rising in price, as Chicago grew, and the higher or finer grades are now at a considerable premium on the values of other descriptions. To supply this apparent scarcity the Canadian forests became contributors to the Chicago market, and yet the calls were for more.

This is probably why the dealers are looking in the direction of the Californian forests for a supply of fine lumber to meet the growing wants, and by an abundant stock check the upward tendency of high class wood that is now so glaringly in contrast to the commoner grades.

Will the Californian wood do this? At present, from the remarks of our contemporary, sufficient redwood is not brought on the market to make it take a recognized place, and till the supply is of a regular character, with enough yarded to be relied on, no encouragement is given to the demand. Supposing the requisite stock is available in Chicago, or elsewhere, when the high values of the upper grades are so marked, we fail to see how the sequoia can supply the place of pine. The woods are essentially different. They hardly have a single attribute in common between them, beyond the absence of knots and sap. First quality pine, such as we see shipped at Montreal and Quebec, is a peculiarly, silky, soft wood, with a capability of being worked up to an even surface as smooth as glass, by the mere action of sand-papering.

Sequoia will not always show this smoothness; in fact, it is rather noticeable for its grain and dark color, another feature that removes it out of the path of pine. Pine is used for patternwork, and its whiteness is an advantage in making pencil marks, but the Californian wood is as dark as cedar, and the figure on it would be a decided objection to pattern-makers. Another thing, it is much heavier than first pine, sequoia being relatively 108.9; pine, 100. There are uses to which second quality and the other grades of pine are applied, the place of which sequoia could well supply, but its present price puts it quite out of the reach of consumers.

The London *Journal* adds:—

"We differ with our American contemporary, who only thinks that the Californian redwood will come into competition with the higher grades; probably the high price led him to take this view. As stated, we think it will never make headway, at any rate in this market, until it can be put in at a price that will come within the range of ordinary building woods."

"If sequoia intrinsically is as meritorious as the best grades of the deals supplied from Montreal and Quebec, with which it is to directly compete, when offered under the hammer it should go as freely. Of course it has the disadvantage of being strange to many in the trade."

OLD NEW YORK FIRE-PLACES.—On "Monday, October ye second," just 181 years ago, a Boston lady undertook a journey to New York City, an account of which was published in 1825, from a diary in the author's own handwriting, "being a faithful record of Madam Knight's adventures over 'that tract of country where she traveled about a fortnight, on horseback, under the direction of a hired guide.'" Madam seems to have been much pleased with New York, where she made many acquaintances amongst the good women of the city, "who courteously invited me to their houses, and generously entertained me." And her description of the city at that time is well worth reading. She says: "The Citty of New York is a pleasant, well compacted place, situated on a Commodious River, which is a fine harbor for shipping. The Buildings, Brick Generally, very stately and high, though not altogether like ours in Boston. The Bricks in some of the houses are of divers Coullers and laid in Checkers, being glazed look very agreeable. The inside of them are neat to admiration, the wooden-work, for only the walls are plastered, and the Sumers and Gist are plained and kept very white scow'd as so is all the partitions if made of Bords. The fire-places have no Jambs (as ours have) But the Backs run flush with the walls and the Hearth is of Tyles and is as far out into the Room at the Ends as before the fire, which is Generally Five foot in the Low'r rooms, and the piece over where the mantle tree should be is made as ours with Joyner's work, and as I suppose is fastened to iron rods inside. The House where the Vendue was, had Chimney Corners like ours and they and the hearths were laid with the finest tile that I ever see, and the stair-cases laid all with white tile which is very clean, and so are the walls of the Kitchen which had a brick floor. They were making Great preparations to Receive their Governor, Lord Carnbury from the Jerseys, and for that End raised the Militia to Gard him on shore to the fort."—*Weekly Statement*.

A Manual of Industrial Drawings for Carpenters. An excellent work, full of instruction. 176 pages, 6x9 inches, neatly bound. Price, \$2.00.

Not Published in Personal Interest.

EVERY fair-minded reader must have noticed the fact, and admit, that the conduct of this Journal has been absolutely free from any and all special reference that could be construed as being of *personal interest*, i. e., using its columns for the advancement of the professional interests of its proprietor. There has never appeared a single article or allusion which has given special prominence to our architectural department, more than has been freely accorded to each and all brother architects; and the same courtesies would have been cheerfully extended to every member of the profession presenting like opportunities, not excepting those of "spiteful turn of mind, who seem to be best pleased, and more in their natural element, when extolling and praising their own abilities, and aspersing, denouncing, and misjudging others. Sorry that this is so, but this Journal will not be affected by it, but will continue to live, prosper, and become more permanent with each year of its existence, nor change its course, whether it receives the frowns or smiles of those who from misjudgment, or motives of envy, jealousy, or otherwise, antagonize their feelings and withhold patronage.

We do not covet a single unkind thought from any one, and shall not intentionally provoke any, yet we do not expect to be able to skim along so closely to the line of perfection as to hope to be able to shape a course to the satisfaction of all. The best that any man can do will not be good in the eyes of every one. Humanity in some is exacting and merciless toward others, although none are exempt from human frailties, weaknesses, and faults. Still we shall do the best we can, hoping to receive all the encouragements our earnest efforts shall deserve, and as much more as our generous readers and the public may, in the magnanimity of their hearts and natures, see fit to bestow.

We have received from George Stinson & Co., of Portland, Maine, the well-known art publishers, a magnificent, full length, steel engraving of General Grant. It is after Anderson's celebrated photograph, which was made while the General was still in full vigor, and represents him in his sturdy, manly strength, as the people wish to remember him. It is, undoubtedly, the best portrait ever made of the General.

Messrs. Stinson & Co. are in need of agents for several important, popular, new publications, and offer inducements that should be heeded by those in need of profitable work. Those who write to them will receive, free, full particulars.

LEAD PIPE.—The Romans appear to have been acquainted with the use of leaden pipe, although they had not the appliances for fabricating any of large dimensions, or sufficiently strong to withstand pressure from the fountain head. In the museum at Cherchel is a piece of lead piping made by rolling a sheet of metal, turning the edge over, and then running molten lead along the joints.

Qualified and Competent Foremen.

EXPERIENCE proves that the right man in the right place, as foreman, to manage and direct operations in the erection of building, and in all kinds of mechanical works, is of the highest importance to all concerned—contractor, architect, and owner as well. To the contractor in two important respects: first, financially, as the profit or loss results are very materially affected by the right and proper management of the workmen, so as to obtain from them the full, reasonable, and right amount of service within the hours of labor. This can be done by a competent head man, without the workmen experiencing a sense of having been "driven"—urged beyond a fair application of his working abilities. The influence exerted upon a gang of men by a respectful, yet persevering and exacting leader, is great. Men worthy the name of mechanics will follow cheerfully when led by one capable of rightly filling the position of foreman, with a right understanding of human nature as found and developed among "gangs of men," and knowing how to sympathize or rebuke as may become necessary. While the good foreman needs to be firm, determined, and ever on the alert, the exercise of good judgment is of the highest importance, and a certain degree of patience is indispensable, for the purpose of pacifying and controlling, where petulance and harshness might vex and excite the inferior passions, and promote idleness and disinterestedness, to the financial disadvantage of the contractor. Secondly, if the foreman is not in every way qualified for the position, so as to be respected and promptly obeyed by the workmen, they become careless as to the quantity of work done, with more interest in pay-day, and the expected sum of wages at the end of the week, than anything else, while under the better condition of things individual interest is felt in the progress of the work each day, with pay-day as a known certainty when the week shall end.

To architects the good foreman is the all-important man—much more so in his place than the contractor himself, as the proper understanding and correct carrying out of the plans and specifications, as a rule, are intrusted to him. Mistakes are made or avoided according to the capabilities of the foreman, who is expected to lay out and dictate all measurements, and order and direct every department of the work. With a competent man, an architect's duties become infinitely more easy and pleasant, as the professional cares and anxieties are greatly modified when the management is in right hands, both as to quality of workmanship in general construction, and neatness and completeness in the finish. And to the owner, although perhaps ignorant of the numerous possibilities attending the erection of a building, the good foreman is all important, as the results for which he pays are materially affected by the qualifications of the man who directs the mechanical operations. It is possible for a foreman to do many mean

things, and incorporate defects, and hide them even from the closest scrutiny of the architect, to the injury of the owner's interests.

Eastern Competition in Wrought Iron Work.

THE facts brought out in connection with the "box girders" made East and shipped to San Francisco for use in the Union Club Building, and elsewhere noticed in this issue, are strongly suggestive, alike to "wrought iron workers," owners of property, tradesmen, general dealers, and business men. To wrought iron workers as suggesting the necessity for more complete and perfect arrangements, machinery, and appliances, enabling the handling, shaping, and dressing of heavy girders and all other description of works, to advantage, and doing all that can be done in any other part of the United States, as cheaply and as well, barring differences in cost of labor, and even overcoming that to a large extent, if not entirely.

A material difficulty in this connection exists in the fact that the number of shops and firms operating in this line are far too numerous for this city, except in extremely brisk times; that while there are two or three fairly equipped establishments, sufficient in appointments to supply all ordinary demands, or, in fact, anything that might be required of them in wrought iron work, there is no one firm or establishment of comparative "gigantic proportions" capable of taking hold of any work offered and defying all outside competition.

The freightage and handling expenses of plate iron in long lengths certainly should not be any greater, if so great, as that of heavy, manufactured girders. In this regard, the advantages should be on the side of our local workers, with which, as a fact, leaves all the advantages possessed abroad, in the more complete methods of working, and any difference that may be in labor and incidentals.

As far as owners are concerned, they have a partial right to do as they please in such case, that right being limited only to the extent of the personal obligation resting upon every man who has accumulated property in a community, to assist in strengthening and sustaining the surroundings, which give increased value to property; and every intelligent man must understand and admit that the retention and circulation of money within a community adds value to its real estate, as well as increased personal wealth,—considerations which largely or altogether regulate rental incomes; consequently it must be adjudged that they are more selfish than wise who spend their money in distant places that cannot, in the nature of things, be expected to return any direct or indirect advantage to the payor, beyond the primary savings in first cost.

Tradesmen, general dealers, and business

men are alike interested in the effects and results of every contract let to parties doing business outside the State of California, in that it removes money from local circulation, to other parts of the country, whence no return can be had or expected. The tradesman in our midst cannot spend that which he should have, but has not because sent to other parts, and the dealer and business man is short in his receipts just whatever of coin might and would have resulted to local trade in purchases that might have been indulged in, had the contract moneys been retained within local bounds and circulated among the working men and others in San Francisco.

The conclusion of argument in such cases must therefore be, that in the construction of building, it is right, wise, and best that every dollar paid by owners should pass into the hands of parties residing and doing business in, and having abiding interest in the welfare and prosperity of, this city and State. This proposition is sustained by every right, consistent, and self-preservative view of the case; and every contract let direct or through agencies, to parties or firms in other States, for materials or things manufactured that might be obtained in San Francisco, is, so far as its influence extends, a public injury.

Hard Wood Lumber.

THE progress of hard wood lumber manufacture has been steadily westward. New York and Pennsylvania were once the principal hard wood producing States. Then Ohio was invaded and largely stripped of its available timber. The Indiana forests have been exploited and nearly exhausted, and coming square up against the great savannas of the Mississippi Valley, which extend, practically unbroken, to the Rocky Mountains, the westward movement was checked. The stream was divided, one part turning to the north, into Michigan and Wisconsin, while the other and larger part has trended toward the southwest, extending into Kentucky, Tennessee, Mississippi, southern Missouri, Arkansas, and Indian Territory. These two divisions of the hard wood industry are for a long time to come to be competitors in the markets of the north, though the southern belt has some most valuable woods which the northern has not.—*The Wood-Worker*.

Masinissa, who died 148 B. C., deservedly occupies a conspicuous place in Roman history. Although a barbarian, he was free from the crime so common among uncivilized tribes. Fearless in war, generous in disposition, a good statesman, and firm in loyalty to his Roman allies during an unusually long life, Masinissa may fairly be considered the hero of Numidia. Like all his race, he drank nothing but water, and, at the age of ninety, was able to jump on his horse bare-backed. He left forty-four children.

Architectural Organizations.

WITHIN the past few years the interest in architectural associations in all the more rapidly improving sections of the country has greatly increased, and in the parts where architects are most active in this direction, there seems to be more life and progressive activities. The influence of such organizations is to drive out the narrower conceits of the mind and to develop more enlarged and broader views as to personal relationship and professional courtesies and practices.

That "there is nothing new under the sun" may be a verified truism in a general sense, as to principles and material things, but no one mind is so full of absolute knowledge as to be justified in claiming universal information upon all subjects, nor perfect understanding of all details of but few, if any. Hence, all unities and co-operations designed and calculated to harmonize views and sentiments, correct errors, and lead to right conclusions must be fruitful in good results.

The age is one of progression. The bound from the common conditions of forty years ago to those of the present day is grand and wonderful to contemplate. And in this mighty advance and overturning the science of architecture has shared a part and made its record, whether for the better or worse would require hundreds of pages to discuss in full. But this is certain, that those who permit themselves to drift and strand upon the barren rocks and ledges of absolutely selfish purposes and individualism, must expect to perish in their self-imposed and dreary isolation.

Skipper—Contractors, and Other Things.

ALL sections of the country seem to be more or less cursed with that class of unprincipled creatures known as "skippers," i. e., fellows who enter into contract obligations at any price, high, low, good or bad, as the case may be, so that they can secure to themselves the opportunity to handle and pocket coin, paying it out only as far and fast as may be necessary to mature other payments in greater amount than the aggregate of the sums paid out, until the chances to make other "hauls" are exhausted; then comes the *finale*,—the boss gone to parts unknown—skipped, leaving everybody to do the best thing possible under the circumstances. If a few of such rascals could be caught and strung up by the neck as an example, the morals of the contracting business would certainly be improved, and the world not be the least set back by the sudden disappearance of a score or two of such men.

There is a case related where one of the kind in New York contracted the erection of a lot of buildings, hiring and working a large force of journeymen, who, at the end of two weeks, were creditors for wages in the sum of nearly \$2,000, but the should-be payor, the contractor, was nowhere to be found—had "skipped"—and, when the owners were interviewed by the workmen, they were informed

that all moneys due had been collected by the absent one. The matter being referred to the Carpenter's Union, and a transfer of the indebtedness made to a delegate, a lien suit will be commenced to test the validity and soundness of the protective law, and trade interests generally will watch the result anxiously.

The Trade Unions in the Eastern cities are very diligent and exacting as to the strict observance of the rules adopted. The combination appears to be solid, and will likely so remain, so long as fairly brisk times continue; the only likely decline will result, if at all, under a general let down in activities, so as to bring about that wretched condition of things which has in former years spread want and privation among the laboring classes, and, in isolated cases, actual starvation. It is well and proper that men should combine for the purpose of determining and protecting mutual business rights and interests, but it is wise to temper prosperity with a great deal of good judgment and deliberation. Much more is permanently affected by a wise, moderate, yet solid and defensible course. When advantages are rendered tyrannical and oppressive, they invoke and excite prejudices and opposition, and when the occasion presents itself, retaliation ensues. That which is most to be desired is a right understanding between labor and capital—a harmonizing of the two material factors, so that each will feel its proper dependence upon the other, and neither seek to oppress.

"None Such"

Is the significant name of a ventilator and chimney top advertised by Kneass & Co., 29 Taylor Street, and which is very highly recommended, as, "No trouble to get up a good fire;" "Does all that is claimed for it;" "A thorough ventilator," etc.

It is so constructed by flanges and openings that the slightest currents of air from without and from any point, up or down, cause a vacuum and an upward and outward current of heated or foul air from within, doing all that any apparatus placed in open air for a ventilator can do, and more, because direct currents of air pass through it in greater volume than any other yet invented; therefore it is more powerful in operation, and is so constructed that the current of air from without passes through it and off in such a way that it is impossible to have a back draft.

It has no movable parts and cannot get out of order; no squeaking of rusty machinery; it is worth its cost simply to keep out the dampness when used as a chimney top.

The largest body of fresh water on the globe is Lake Superior, 400 miles long, 160 miles wide at its greatest breadth, and having an area of 32,000 square miles. Its mean depth is 900 feet, and its greatest depth is said to be about 200 fathoms. Its surface is about 635 feet above the level of the sea.

San Francisco's Sewerage.

THE universal and continuous outcry that the sewerage of this city is bad, is fully justified by the facts of the case. In some respects they are about, if not absolutely, the very worst to be found in any city upon earth's surface, with anything like equal, natural drainage advantages. Nature, or the power that caused the hills to raise their tops high above, the lower lands, left in the main but very few acres of level ground within the city's site the altitudes of the *many* hills varying from more than three hundred feet down to the bay-washed shores. In three directions,—north, south, and east,—the water-sheds and courses were originally exceedingly fine, and if even fairly clever civil engineering had been practiced in the establishment of street grades, and consequently the grades of sewers, our present dilemma would have been avoided. It is only fair, however, to remark here that the "established grades" are those foisted upon the city by a modifying board of civil engineers, who, for reasons, set aside the "original surveys" as made by Mr. Milo Hoadley, which utilized and equalized the cuts and fills; to produce that splendid system of inclines and grades which, if they had been carried into effect, would have made San Francisco's sewerage unsurpassed by any other city in the world.

The difficulties surrounding the case are irremedial, except the partial reliefs obtained by flushing and cleaning, which, unless constantly employed, afford but temporary and momentary remedy, unless, further, the wiser and *only entirely correct and effective course*, advocated by this Journal years ago, is adopted and carried out, i. e., to *MAKE the grades of the sewers such as will meet the requirements and necessities of the case*. There is a natural law or principle involved in this matter, which is absolutely arbitrary, and will not change to accommodate human views. It is all supreme nonsense and folly to say or think that sewers will run free, and clear themselves, when the lower portions lie at dead level for a distance of from 1,000 to 2,000 feet, particularly with the discharge or outlet end submerged below the surface of the waters of the bay, into which they empty, as is the case in this city. The debris from the higher parts is washed down to the level sections, where the more solid matter lodges and remains, settling and forming a dam, the lighter substances passing off in solution; and it needs only the exercise of the most ordinary intelligence to understand that, under such conditions, choked sewers are inevitable.

Had the suggestions made in this Journal five years ago been carried into practical effect, to wit: Take the grade of Dupont Street at California, with its eighty-six feet elevation, or modify that by raising Kearny Street ten feet, or even adopting the altitude of Kearny at California Street, thirty-five feet, as the high point of grade toward the sewer outlets, and following the same regulation corre-

spondingly around the other portions of the city, filling in and making a uniform slope in all directions; while the expense would have been very large, the benefits would likewise have been immense; and the cost much less than it would be to-day; and it will cost less if done *now* than at any future time, as every new building erected adds to the difficulties. The answer to this may be, It is a preposterous, monstrous proposition. The reply is, Be it so; it is nevertheless the only effectual means of remedying the most fearful, local, permanent evil and curse existing in San Francisco, and such it will continue to be until the heavy cost method of correcting the evil is adopted. Artificial means have been, and will continue to be, applied, but the ever-recurring results will be the same, no clean and clear sewers enjoyed, until the natural laws of gravitation are observed.

Master Painters' Association.

THE regular monthly meeting of the Association was held at its hall, 121 Eddy Street, on Tuesday evening, 1st inst., President Gallagher in the chair; Thos. Noble, Secretary.

Resolutions of condolence to the family of the late member, David Kanary, were adopted and ordered spread upon the minutes.

Report of committee on cards with sign signet, for the special use of the members, was adopted.

A communication from a member, J. F. Sullivan, containing resolutions and offer of co-operation by the master painters, with architects, owners and contractors, to check and prevent the numerous innovations upon the use of pure paint materials and good workmanship, was read and adopted. A committee of four, consisting of Messrs. Sullivan and Donovan, of San Francisco, and Messrs. Kress and Weissell, of Alameda County, was appointed to confer with architects upon the subject matter of the communication.

A vote of thanks was tendered the editor and proprietor of the CALIFORNIA ARCHITECT AND BUILDING NEWS for favorable notice of the proceedings and purposes of the Association.

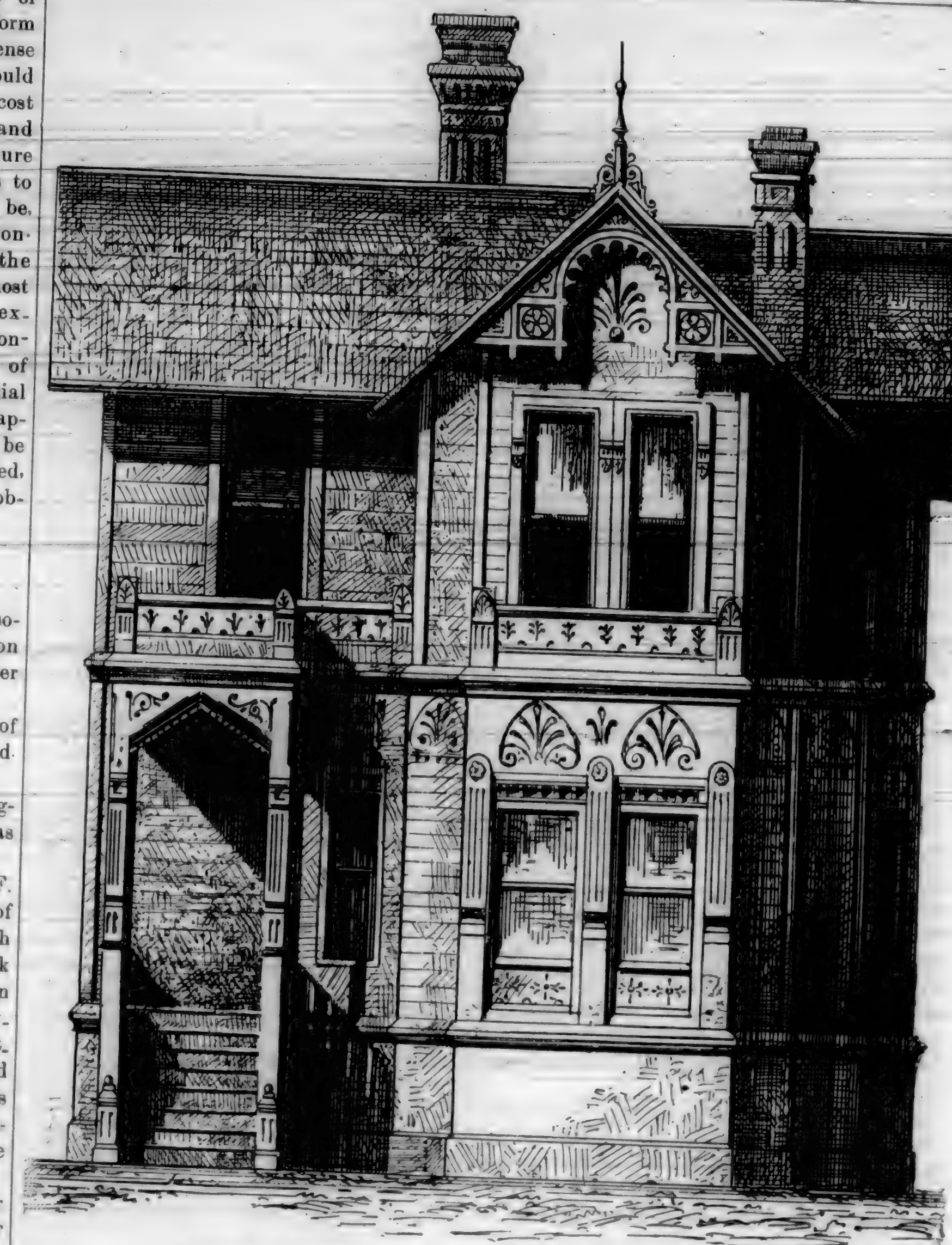
The resolutions offered by Mr. Sullivan, and adopted, read:—

To all parties interested in the building interests in the city and county of San Francisco,—architects, owners and contractors.

WHEREAS, The Master Painters' Association of the Pacific Coast being informed and knowing that adulterated paint materials, containing none of the elements of pure lead and oil paint, are manipulated and passed off as genuine in quality, and inferior workmanship imposed upon architects, owners and contractors by parties assuming to be practical painters, and

WHEREAS, It is the purpose and desire of the responsible portion of the craft, under the title of the "Master Painters' Association," to expose and prevent, as far as possible, a continuance and repetition of such wrong and demoralizing practices, therefore, be it

Resolved, That said Master Painters' Association tender its services, as an organiza-



FRONT ELEVATION OF A SUBURBAN DWELLING.—PLATE I.

tion, to owners, architects, and contractors, by competent expert representatives, duly appointed, to detect and expose all such improper practices in the future.

To accomplish this desired purpose, said Association requests that all owners, architects, and contractors who may become satisfied that wrongs are being practiced in the painting work of any building or works, to report the case to the Executive Committee of the Association at its rooms, 121 Eddy Street, second floor, whereupon said Executive Committee will forthwith designate two competent members of the Association to investigate the facts of the case, and report to the Executive Committee the result of their investigations, whereupon said Executive Committee will report the facts to the owner, architect, or contractor in interest.

Resolved, That it is not proposed to assume any dictation or control, or in the least interfere with the architects' duties, but simply to ascertain the true state of the case connected

with the painting work, and report accordingly.

Resolved, That neither owner, architect or contractor be charged for such expert services.

A NEW BUILDING MATERIAL.—A mixture of cork, silica and lime is coming into extensive use in Germany. It has the advantage of keeping out heat and cold, and is also claimed to be an excellent preventive of damp and defense of sound. It is substantial, light and durable, and seems to be especially adapted for ceiling and wall lining.

Kansas lands, in the last ten years, have yielded products valued at the enormous aggregate of \$1,046,262,264. Yet it is one of the youngest of the States. In 1883 the corn crop was nearly double that of any other State. It stands fifth in the amount of wheat grown.

Architectural Competitions in Disfavor.

THE general expression of architects in all parts of the country, as received through all journals published in the interest of architectural sciences, is very decidedly against the practice of plain competition. By all the better class of educated architects, it is regarded as demoralizing and unprofessional in character; a bartering away of professional skill at values fixed by men who seek to obtain a large amount of architectural work and service for an exceedingly small amount of money.

A most glaring wrong and injustice is shown by the fact that, in no case of competition, are the services and labors one-tenth part compensated, as a whole, induced by the invitations, sometimes studiously seductive, very generally thoroughly deceptive, in that representations are made, calculated upon fair interpretation of the language used, to impress the minds of men not posted in such matters, with the belief that a square deal is proposed; while in fact the arrangements and understandings are all well matured, if not absolutely completed with some preferred architect.

We will not go so far as to assert and charge that where committees are appointed by respectable bodies for the purpose of procuring plans, or boards of trustees, that all the members in either case are alike guilty and responsible for the numerous *bad things done*; but there is always one or more of the influential members who have friends to serve, or who, for other considerations, become very active, and manipulate influences by which they virtually control the whole matter, so that any or all parties not in such special influential favor, only waste time and skill, and secure to themselves disappointed hopes and expectations.

In other cases, the competition propositions are based upon fixed purposes and intent to beat some one; to find some fool willing to be little professional compensation to the rates of wages paid ordinary journeymen, house carpenters or brick masons. But such plan hunters sometimes pick up a boomerang, in the shape of badly damaged property, by bad planning and worse construction. And this fact is very certain, that, to include all plans made in competition during the past ten years, placing values thereon according to schedule rates, then add up all the monies paid as premiums, and all the regular fees received by architects, and divide the amount pro ratio among the plan-makers, and the result would not reach more than *one-tenth of one per cent* on the original estimated costs. If this is not demoralization, then that commolity is difficult of access.

The *Building Trade Journal* remarks on this subject: "This practice has been more fruitful than any or all others put together, in disappointments and loss to owners, by placing the erection of important work in the hands of inexperienced draughtsmen, or reckless, wire-pulling practitioners. It has resulted in a vast amount of bad building all over the country. Said a witty journalist: 'I always won-

der, when a new Court House is finished, that the people of the county do not hang the architect the first thing.'"

The president of a corporation employed a competition architect to design a building that cost \$100,000 more than the estimate (that is one of the tricks), which resulted in a large crop of litigation wherein the owner explicitly testified in court to numberless defects in plans, and finally remarked to one of the profession, "I do not think much of you architects any way." (Of course he judged all by the scrub type he had employed.) The apt reply was: "No wonder, considering the kind you patronize."

"But in regard to the general practice of architectural competitions, the impression is strangely prevalent that it cannot be overthrown; that it has always existed and always will; that it is the blood, so to speak, and cannot be cast out. Never was there a more unfounded delusion among a body of liberally educated men. So far from being a practice which has always existed, it is, with rare exceptions, an innovation of quite recent date. All the traditions of the profession, all its records of great achievement, are almost uniformly against it. Which of the notable buildings of the Middle Ages, the world-famed cathedrals, abbeys, castles, mansions, from the thirteenth century down to our own day, were designed in competition? How many of the great works of Michael Angelo, Bramante, Sansovino, Bernini, Scamozzi, the San Gallos, Palladio, Schenkel, Klenze, Labrouste, Duc, Duban, Sir Christopher Wren, Sir William Chambers, or any other of the great names of architectural history were obtained in a competition scramble? If these matchless monuments could be designed with a perfection and grace the world will never cease to admire; how can American architects maintain that a County Court House, or a club-house, or even an exposition building, cannot be properly planned without competition? The example of Brunelleschi with the Duomo of Florence, is often quoted in favor of competition, but this was an exceptional instance, and only proves the rule against the habit. If Brunelleschi was a competition architect, why was this the only instance of the kind in his work? Moreover, what achievements has the practice of competition to cite which will at all compare with these great works which have been designed without it? What record, indeed, of any kind can be shown for competitions except of great expectations and signal disappointments, of buildings which are architectural abortions, of intrigues, corruptions, scandals, and litigation?"

"The craze for competition is not an ancient and venerable custom which cannot be disturbed. In England it dates chiefly from the building of the new Houses of Parliament; in France, from the year 1860. All the great advances of the profession were made before it arose to disturb their peace—since then it has wrought only mischief."

"Nor is it true that competition is 'in the

blood,' nor that it is a feature of modern civilization, nor that, because it is 'the life of trade,' it is anything but ruinous to a profession. Competition is essentially unprofessional, and is endured at all only among architects. It is not found among lawyers, doctors, artists, civil engineers, nor in any of the other professions."

Many of the leading authorities among architects have already expressed their unequivocal condemnation of architectural competitions *in toto*. At the Convention of the American Institute of Architects in New York, in 1867, President Upjohn, one of the oldest and most eminent architects in this country, thus warned the profession against them:—

"I feel as if I should not fully discharge my duty to my younger professional brethren, if, after my extensive opportunities, and long experience, I should omit all allusion to a subject, the effects of which have, according to my observation, produced much evil, and only evil, to the profession. I allude to competition—a general competition—a sorry subject for architects. It burns the fingers of all those who meddle with it; it is a chronic infatuation, an *ignis fatuus*, a Will-o'-the-Wisp."

Now, my good friends, this species of infatuation (I can call it by no better name) should be shunned. I pray you to let general competition alone. Avoid it as an unclean thing, which can produce only heart-burning and disappointment; and, by abstaining, you will give it its death-blow."

Vice-President Hatfield and others have said: "Competition is a barrier to progress, second only to professional exclusiveness."

"Can that which engenders jealousy, false representations, misunderstandings, bitterness, dishonest propositions, and evil wishes be promotive of good, either to architects or architecture?"

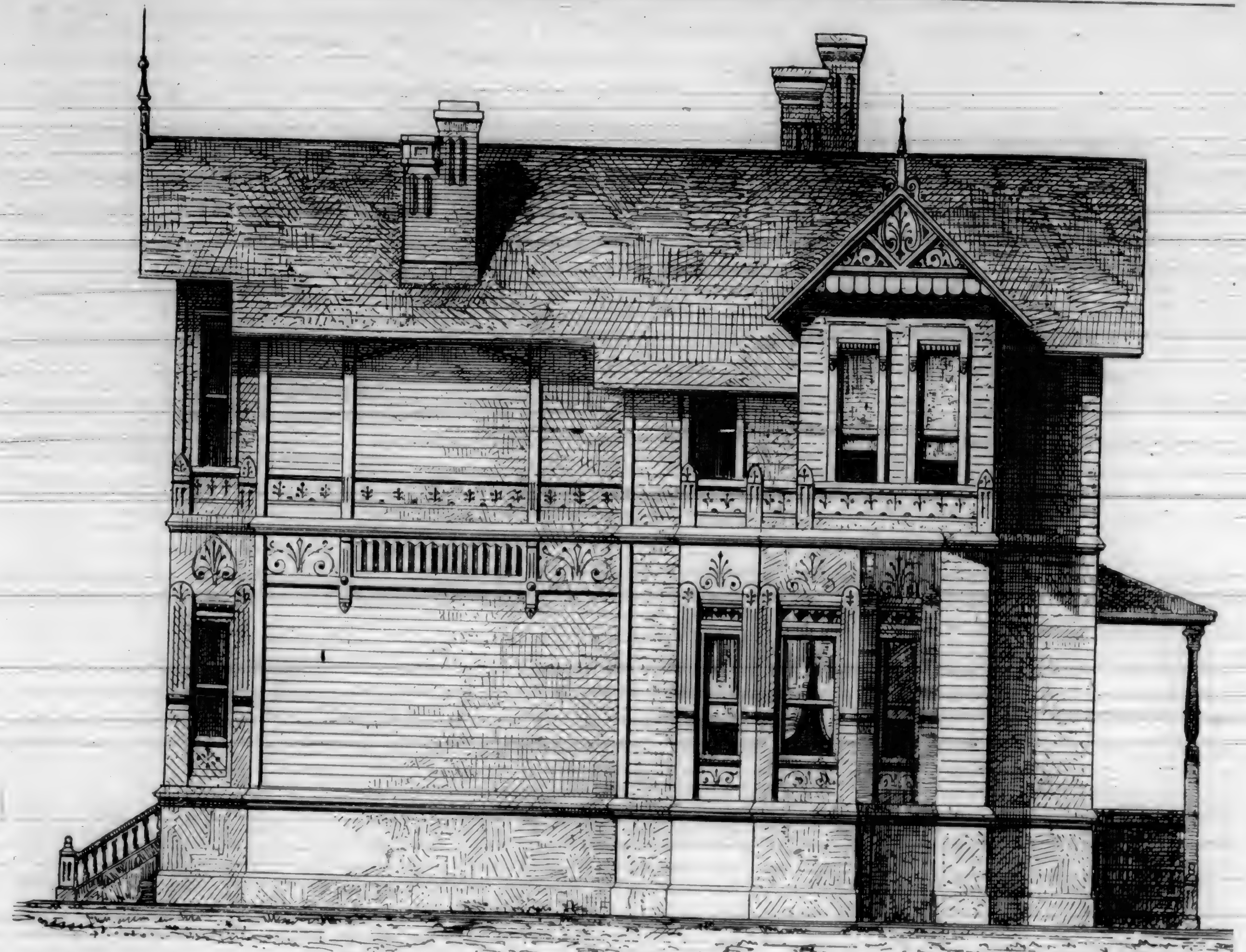
"By competition as now managed, we see that an unscrupulous competitor endeavors to rise by treading upon his fellow competitors."

"Those who allow themselves to be ensnared into its toils, soon lose their self-respect."

"Theoretically, competition is a fair method of estimating reputation, but practically it has been in nearly every case a failure."

The Toledo Court House, to cost \$500,000, was wisely given to a local architect without competition.

CRUSHING RESISTANCE OF BRICK.—Walls laid up of good, hard-burned bricks, in mortar composed of good lime and sharp sand, will resist a pressure of 1,500 pounds per square inch, or 216,000 pounds per square foot, at which figures it would require 1,600 feet high of 12-inch wall to crush the bottom courses, allowing 135 pounds as the weight of each cubic foot. Walls laid up in same quality of brick and mortar, with one-third Portland cement added, will resist 2,500 pounds per square inch, or 360,000 pounds per square foot, which would require a height of wall 2,700 feet to crush the bottom bricks.



SIDE ELEVATION OF A SUBURBAN DWELLING.—PLATE 2.

German and American Tools in the British Colonies.

A CORRESPONDENT writing from Auckland, New Zealand, to the *Sheffield Independent*, records the surprise he felt at finding American and German cutlery and hardware so generally adopted throughout the colony. He says that saws of all kinds, axes, carpenters' claw hammers, bench axes, adzes, garden tools, hay and manure forks, braces, etc., of American manufacture, are preferred to Sheffield goods. The American file manufacturers are coming to the front apace, and unless the Sheffield makers put better steel into their mill saws and saw files, they will soon lose this trade. The imports of German and American cutlery, too, are largely on the increase. A much better price can be got for American articles than for Sheffield goods. A workman will give 7s. 9d. for an American hand saw rather than 5s. for an English one; 3s. 6d. to 4s. for a claw hammer rather than 1s. 6d. for English; 8s. for an American ax rather than 6s. for English. There is not much difference in quality between English and American

manufacturers; if there is any it is in favor of England, but in style and finish there is no comparison, the American being far ahead. Workmen say the Sheffield tools are so heavy and unmanageable that they soon get tired in using them, while American implements are so designed that a greater amount of work can be got through with much less fatigue. Another great factor in introducing American goods is the handy manner in which they are packed, card board or light wooden boxes being used, which are much more convenient than paper parcels. A storekeeper can show an American article in a moment, but an English one has to be denuded of two or three wrappers before it can be shown, and to save time and trouble the American article is first shown.—*American Inventor*.

DECORATED CEILINGS.—Interior decorations are being much more generally adopted. Plain white walls, without any reliefs, used to satisfy, but the improved tastes of the age call for a departure, and nothing adds more to general effect than a neatly, if not richly decorated ceiling.

Our Illustrations.

We present in this issue the elevations (plates 1 and 2) and plans (plates 3 and 4) of a medium-sized suburban dwelling. From the main hall on the first floor a direct entrance is afforded to the parlor, dining-room, and kitchen. An easy flight of stairs leads to the second floor, where the chambers, bath-room, and water-closet are situated, the latter being conveniently located off the hall. Plate 5 shows another arrangement of the first floor whereby one more room may be added if desired. The elevations are at once neat and attractive without being very expensive.

A lady on Marlboro Street who had summoned a plumber to remove a defunct rat from the wall, recently received a bill in which one item read: "To hunting up a smell and repairing it, \$4.00."

A Muskegon firm proposes to cut 115,000,000 shingles this season—more than any mill in the county has ever cut heretofore.