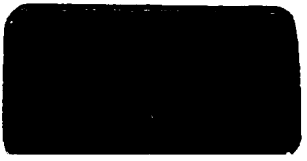

VEY
Vanderwalker

ESTIMATES, COSTS & PROFITS

Exterior Painting Interior Decorating

By

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Carter White Lead Co., Chicago, Ill.

AUTHOR OF
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FOR PAINTING & DECORATING
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PREFACE

Efficiency is the goal of the Business World today and it means just as much to the Contracting Painter as to any other business man, efficiency in business methods, in handling men, equipment and materials. The Efficient Painter makes money on a contract that his inefficient competitor would fill at a loss.

To know your business, to figure where the other fellow guesses at it is the most worthy, the most effective of all efforts to make a profit.

The figures given in this book were carefully worked out and verified. Some are given chiefly to explain the method, but all are as nearly accurate as it is possible to make them under average working conditions. Any tests you may make probably will not come out in exactly the same figures but they will show that the figures given are accurate enough for all practical purposes and to furnish a basis upon which to build an estimate and calculate costs.

THE AUTHOR.

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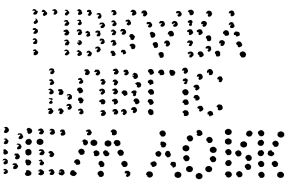
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CHAPTER I.
COUNT THE COST.

Hordes of painters, like business men in other lines, seem to think they must be prospering if they are only doing a large business. If they can underbid another man and succeed in getting a large contract from him they chuckle with glee, even though they have figured the price down so close that there is absolutely nothing left for profit, with the chance of coming out on the wrong side of the ledger. It seems a curious phase of the American character that this mania for doing a large business should so often be allowed to run away with good judgment, and the question of whether the business is a profitable one should be so frequently entirely overlooked.

Many men, especially in the painting trade, have no idea whatever what it costs them to run their business. In some communities the estimates submitted by the painters look like answers in a guessing contest rather than carefully calculated figures. The contractor who guesses too high loses the job while the one who guesses too low gets it without a profit. They figure that if they employ a man for $3 a day and can charge $3.50 for his time that they are making a profit of a half dollar on the work of that particular man, but they fail to take into account all the numerous items of shop expense which must be added to the wages paid to that man to get his actual cost to the employer. There is in-

surance, rent, interest on the cost of stock, wear and tear on scaffolds, tools, brushes, cartage, telephone, shopman's wages, clerk hire and numerous other incidentals that must be paid for somehow before any profit can be realized from the wages of the workmen. In a shop employing an average of from ten to twelve men these shop expenses, leaving out all question of profit to the employer, will often amount to $7 or $8 a day, or some 75c per man. Yet the employing painter goes blindly on, figuring that he is making a profit when he charges his customers 50c a day profit on the wages of each man. Perhaps he thinks he is covering the shop charges by the profit on material, but let him figure it up carefully and he will find that this is seldom done. Yet he goes right along in the same old rut, taking a job for a low figure, because some other painter has offered to do it for that price, without even stopping to figure whether he will make a profit or not. He argues that if the other man can do it for that much money, certainly he can. Like as not the other man's low figure exists only in the mind of the customer, who is trying to beat down the price. This is too often the reason why painters are slow and uncertain pay, and why the manufacturers do not co-operate with them more readily to grant special trade discounts or similar favors that thoughtful men believe should be legitimately granted.

Do some mental calculating as well as manual work; sharpen up your pencil and figure everything, let the other fellow guess on his measuring and estimates and he will also have to guess where his profits have gone.

ESTIMATES, COSTS AND PROFITS

Painting is a business and painters to be successful must adopt successful business methods, particularly is this true of the contractor who employs a number of men. He is not a mechanic any more; he is a business man and needs a business organization just as much as a railroad or other big corporation.

It may be argued and with more or less truth in a degree that if a contractor in some localities were to make up his estimates to include all costs and a fair profit after the method given in this text book he would get but few jobs. In such localities there are usually twice as many half trained journeymen who take contracts as can possibly exist off the amount of business to be had in the locality. They are reduced by competition of their kind to taking contracts for a price that barely enables them to pay for materials and have journeyman's wages left. The paint business on such a low level of price cutting is a detriment to the community, to the individual property owner, to the journeymen and the competent contractors. If the property owners are very wise they may get the best of it by seeing that pure materials and sufficient labor are consumed, they may superintend closely, but in most cases the house owner gets a low price, poor material and unskilled labor—the job is skinned. Then the property all over the locality "runs down at the heel." The community appears to have chosen Peter Tumbledown as its ideal.

The journeymen taking contracts make but a meager living. Transient painters drop off of pass-

ing freight trains each Spring, take a few jobs away from the resident journeymen and add more poor work to the community to the disgust of the good citizens and the competent contractor works along on about half time because he thinks he must meet the prices of the journeymen taking contracts. He does not inspire the confidence of the house owner who figures that he must be the same kind of a painter as all the rest,—his prices are the same and he doesn't say anything about or prove that he can do better work.

In a community like this a competent contractor with a desire to do good work at a fair profit has but to choose between two courses. Either he must get out of the town and go to a community that offers a better opportunity or he must stay where he is and resolve to fight it out at home. To choose the latter course means to precipitate a business war —a war of brains and wits, not of words and strife between contractors.

You must break away from the crowd,—from the business practices of other contractors. Lay your plans carefully to win over the property owners of the locality and especially to get the newspaper editor on your side. Be a good citizen. Join the business organizations and the commercial club. Do the very best work you know how—show an interest in your customers' work by trying conscientiously to give each customer all he is entitled to and a little more and when he asks for material that will not be satisfactory, for colors that will fade too soon or for a one-coat job where you know it will not serve

well be frank and tell him that such a job could not stand well. When he wants you to paint over old paint that has cracked and scaled have the courage of the surgeon and attack the problem. Explain why new paint will not stand without scaling over such a foundation. People are willing to pay for quality work if you convince them you know your business and want to play fair.

Study your business constantly. Even if you served your apprentice time and learned the trade from an expert master you will learn much of modern problems and methods from the trade journals. If you didn't have the opportunity to learn from a good master painter get the best books and study, experiment and practice.

You must advertise constantly and in a thinking manner. Tell the community that it needs pure paint and an honest painter, state your desire to do only first class work, that you are capable of doing it and that naturally the price of a good job is a little higher than the cheap one. Make it clear that you could paint a house as cheaply as anyone by skinning on material and labor, but that you don't want that kind of contract because you expect to remain in the community, hold the respect and confidence of the people and have your home there.

A year or two of good work, constant, intelligent advertising and an effort to get living prices for your work and you will be surprised to see the transformation. The journeymen who used to take contracts will be glad to get on your pay roll for steady work; the bank will welcome you as any other pros-

perous business man in town and you will have decided that the paint contractor has a business worthy of his metal and one that will insure a good income.

CHAPTER II.
FIGURING THE COST OF A JOB.

Every job is worth all it costs—and a Profit. In making up an Estimate to submit for any kind of exterior or interior painting and decorating it should be divided into four sections—Material Cost, Labor Cost, Overhead Expense and Profit.

Material Cost.
Section No. 1.

Each pound and gallon of material and every new tool completely used on a job should be charged against that job. The charge should be made on your record as the material leaves the shop. Material not used and returned may then be credited back. New tools not completely used on any one job ought not to be charged against the job at all, but rather included in Overhead Expense. Even such small items as sandpaper, steel wool, soap, starch, flour, glue, putty, etc., are important and should be charged for along with your lead, oil, varnish, stain, wallpaper, shellac, colors, bronzes and such of the larger material costs. See Sections Nos. 18 and 19.

Labor Cost.
Section No. 2.

A job should be charged only with the direct labor—that is the labor directly consumed on that job alone and not with any part of the wages of shop man, teamster or truck driver, clerk or others

indirectly employed, because their efforts apply on and assist the execution of other jobs going on at the same time. Indirect labor of this kind ought to be charged against Overhead Expenses and thus passed on to be distributed among many jobs. These many jobs will be future rather than present contracts to be sure, but present contracts are charged with the Overhead Expenses of past jobs completed if your Estimates and Prices were equitably and correctly figured.

The time or labor of the contractor or employer is not charged against any one job unless he works on the job as a journeyman.

The contractor's time for superintending the job is paid for in Profit.—See Section No. 4. Contractor's time when he works on the job as a journeyman should be charged against that particular job at the same rate he would have to pay any other journeyman equally competent to do the work. In this instance he would get the Profit included in his Estimate for Superintending the job, for Interest on his money tied up in equipment and for the Risk assumed, Employers' Liability. He would also get wages as a journeyman. See Chapter III, Section Nos. 18 and 19, for details.

In handling a large business the employer should draw out of the business each week or month a salary as compensation for the work of managing the business. Then the profit which accumu-

lates at the end of the year will be compensation for the use of his money tied up in equipment, materials etc., and for the risk assumed.

Overhead Expenses.
Section No. 3.

Every expense of conducting your business that cannot be directly charged to one job or another is an Overhead Expense. For instance, when you buy five bales of hay for the horse or gasoline for the truck you cannot charge the outlay of money against Bill Jones' house which you happen to be painting, because the horse and wagon or the auto truck was used to haul the material. The transportation equipment was used on dozens of jobs during the season. The expense of maintaining your cartage facilities must be divided among all the jobs done. If, however, you hire an expressman who charges $2.00 to haul your material to and from the Jones' job, that $2.00 is not an Overhead Expense but a direct charge to be made against the Jones' job.

If you are among those contractors who to get the cost of a job merely add together the material and labor costs and then count everything else as profit, you ought to climb out of that rut at once. It keeps a man poor.

When you charge against each job only the labor and material costs who is to pay such as the following expenses?

INCLUDE THESE ITEMS IN YOUR Overhead Expense.

RENT—Office, Shop, Garage, Barn.
If you own the buildings charge rent for them in your Overhead Expense account, anyway at the rates they would bring if rented to someone else.

LIGHT.

HEAT.

INSURANCE—Fire, Accident and Employers' Liability.

OFFICE EXPENSES—Clerk Salary, Postage, Printing, Typewriting, Telephone, Etc.

ADVERTISING—Newspaper, Programs, Signs, Association dues and payments to local business organizations. Donations.

CARTAGE—Amounts paid expressmen, except separate cartage that can be charged to any one job. Railroad Charges, Horse Feed, Livery or Garage Expenses, Gasoline used in auto trucks and all expenses incurred for transportation equipment.

LOST ACCOUNTS—Bad Debts that probably will never be collected. Cost of collections.

REPLACEMENT—Maintenance, depreciation, breakage, wear and tear on tools, machinery and equipment, brushes, ropes, ladders, paint pots, drop cloths, sponges, etc.

GENERAL EXPENSE—Include here any expense of conducting business that cannot be charged against any one job.

INTEREST ON YOUR CAPITAL—The money invested in tools, material and equipment is a proper charge to include in the Overhead Expense. If you were to borrow the money to buy these things you would have to pay the banker at least 5% for it and you would take this 5% out of the business. When the capital is your own money there is just as good reason

to collect interest on it and pass the charge on to your customers through the Overhead Expense added to each Estimate. The same money invested elsewhere would bring you 5% or 6%; at least 3% from a bank.

Overhead Expenses are legitimate and just as necessary as material and labor charges. Either you must pay them out of your profits or charge them to your customers by adding a certain amount or percentage to each Estimate. As long as you are conducting business for profit the second method of paying these expenses is correct.

When your wagon, tools or equipment wear out you will then have saved enough money to replace them, if you have conscientiously added to the Estimate for each job a small amount in anticipation of this time. If you have not made this charge on each job you must buy the new equipment out of savings you thought were clear profit laid up for a rainy day.

How to Figure the Overhead Charge.

What amount then should be added to each Estimate for Overhead Expenses?

Suppose, for example, you completed 40 contracts last year. Each one brought you $75.00. The total amount of money you received then was $3,000.00.

Out of this $3,000.00 you paid:

750.00	for Material.
1,500.00	for Labor.
200.00	for Overhead Expenses.
550.00	was Profit.
$3,000.00	

Now to find out how much, or what percentage to add to each Estimate during the coming year divide the total amount of money received for all work by the amount paid for Overhead Expenses—the expense of conducting your business. In the example it would figure this way:

```
3000 ) 200 00 ( .066
       18000
       -----
       20000
       18000
       -----
        2000
```

To each and every Estimate you submit in the future then add 6 % of the cost of labor and material. For instance:

If the Material Cost is	$30.00
and if the Labor Cost is	60.00
you add them together	$90.00
Then	$90.00
Find	6 %
	$5.40

Then you have $90.00 for labor and material cost plus $5.40 Overhead, making $95.40 To this figure you must add a certain amount also for Profit before your estimate is complete. See Section No. 4.

A Contractor who has no record of the previous year's business from which to figure what amount to add to his Estimates for Overhead Expense must estimate as nearly as possible the number of jobs done, the amount of money received and the other

odd expenses to figure on, or else take the figure of 15% as the correct one for the first year.

The Association of Master Painters, the Contractors, of the city of Washington, D. C., made a study not long ago of the business of twelve different paint contractors in that city for the purpose of establishing a standard or uniform method for making up estimates and, more particularly, to determine what amount should be added to each Estimate for Overhead Expense. The volume of business done by these contractors ranged from $6,000 to $60,000 gross per year in round numbers. The average amount of business for the twelve contractors was $16,244.00. The conclusion reached by the Association was that in their city it costs 15% to do business or to be exact 14-3/10%. In other words to get the real cost of a job they must add to the labor and material costs 15% of those amounts for Overhead Expense. Then the Profit is to be added.

This 15% is given as an average amount for the city. In some cases it may be too small. On small repair work 20% and even 30% is sometimes charged while on a large contract, of $25,000 for instance, 15% is to much. As stated 15% to 20% will be found a pretty good average.

Profit.

Section No. 4.

After the Material Cost, Labor Cost and Overhead Expense have been figured it is necessary to add to the sum of these figures an amount for Profit before submitting an Estimate or Price.

Just how much to add for Profit must be decided by you. In the building trades the general contractor.....(carpenter).....in Chicago suburbs is satisfied to figure actual cost as above and then add 10% of this cost for Profit. With paint contractors in various sections of the country, however, the profit added to actual cost ranges from 10% to 30% and 50%, according to the kind of work. Small odd jobs, repairs and such should carry a higher Profit than a large contract which might be best figured at 10% or less. Probably the addition of 20% to 25% for Profit is a good average for work in general.

Another Method of Figuring.
Section No. 5.

Overhead, Profits, Labor and Material charges are sometimes figured on the basis of the selling price or the final figure on the Estimate rather than on the basis of actual Material and Labor cost as shown before. While this method is sometimes used the first one given is simple and just as effective.

Taking the same figures used in the other example the calculation would work out this way:

40 contracts at $75.00 each would bring a gross volume of business amounting to $3,000.

For Material you paid out of this	$ 750.00
For Labor " " " " "	1,500.00
For Overhead " " " " "	200.00
Net Profit was	550.00
	$3,000.00

The difference in the two methods begins here. Add together the Material Cost and the Labor Cost:

$ 750.00
1,500.00

$2,250.00

Next divide this $2,250.00 by the Gross Volume of business—$3,000.00.

3000)2250.00(75%

21000

15000
15000

By this we find that the Labor and Material Costs for the previous year were 75% of the total amount of business done,—the total amount of money taken in on contracts as shown by the Cash Book.

Next find what part or percentage of the total volume of business the Overhead Expense represents by dividing $200 by $3,000.00.

3000)200.00(.0666

18000

2000
18000

2000

Overhead Expense figures a little over .0666+ but for the sake of dealing with round numbers cut off the fraction and call it even 7%.

Now figure what percentage of the Gross receipts the Profit was by dividing the Profit,—$550, by $3,000.

3000)550.00(.1833

The Profit was a little over .1833+ call it 18% even.

The year's operations would then divide up as follows:

Material and Labor Costs	75%	$2,250.
Overhead Expense	07%	210.
Profit	18%	540.
	100%	$3,000.

Taking it for granted that you will be satisfied with the same profit this year as was realized last year—18%, and that the Overhead Expense will remain the same it is quite simple to figure the Price to charge for each job this year.

To find this Price to quote (the price that will include your 18% Profit and 6% Overhead) divide the Material and Labor Cost for any job (which represents 75% of the selling Price according to our figures for last year's business), by 75% and the result will be the price to charge.

To illustrate let us say that the costs on a certain job are $200 for Labor and $100 for Material, making $300 for both.

Then to find the Price to quote on the job divide the Labor and Material Cost by .75 thus:

.75)300.00(400
300

$400 is the Price.

It can be poved that $400.00 is the correct price to include the Costs and a Profit in this way.

Out of this Price of $400.00 must come:

7% for Overhead Expense which is	$ 28.00
18% for Profit which is	72.00
	$100.00

From the Price of $400.00 then subtract the sum of the Profit wanted and the Overhead Expense, which equals $100.00, and the balance of $300.00 is the necessary amount to cover the Material and Labor Costs. The division of the Price would then be:

Material and Labor Costs.....	75%—	$300.00
Overhead Expense	07%—	28.00
Profit	18%—	72.00
Total		$400.00

ESTIMATE BLANK

No._____ Date_____ 191

Name _____

Address _____

Description of Property _____

Work to be done _____

_____

_____

No. sq. ft. outside_____ No. sq. ft inside_____

Color Scheme—Body_____ Trim_____

Condition of Surface _____

MATERIAL COST:-

. . . lbs. white lead	at	$
. . . gals. linseed oil	"	$
. . . " turpentine	"	$
. . . pts. drier	"	$
. . . lbs. color	"	$
. . . gals. varnish	"	$
. . . . .	"	$
. . . . .	"	$
. . . . .	"	$

Total $_____

LABOR COST, . . . hours at . . cents— $_____

OVERHEAD EXPENSE, add____percent—15?— $_____

PROFIT, add____percent—25?— $_____

Price to Customer $_____

Tear off here

Date_____ 191

Mr._____

I will do the painting—or decorating—using pure white lead and pure linseed oil on your property

No._____ Street_____

as follows:_____

_____

for the sum of $_____.

The materials to be used will be of the highest quality, the workmanship will be of the best with special care taken to insure neatness and order throughout the job.

SIGNED_____

ADDRESS_____

FIGURE "X"

CHAPTER III.

MAKING AN ESTIMATE— EXTERIOR PAINTING.

There are almost as many methods for estimating as there are contractors who estimate. The method used in the example to follow is probably the most simple one that is accurate.

Contractors who have been making Estimates for years have usually reduced their systems to a few simple rules which they carry in mind. They can look a building over, measure it roughly and tell you it will take a man six days to first coat it and four days to finish it. They figure that a job containing 4,125 sq. ft., for instance, is 40 squares of 100 feet each. They have learned by long experience in the locality that the Labor and Material Costs, the Overhead Expense and Profit on past jobs amounted to a certain figure per square;—let us say $1.50 per square for two coats and $2.00 per square for three coats. To give an Estimate these contractors simply multiply the 40 squares by $1.50, if the house is to have two coats, and give the owner an Estimate or Bid right on the spot amounting to $60.00.

Such a practice is not the best even if it were possible for the contractor without much experience to follow it. The contractors who by their long experience are able to estimate as described are invariably men who are hard pressed for time,

men who visit and inspect dozens of jobs per day. However, justified they may be in adopting the short method to save themselves and handle a large volume of work the fact remains that the method does not provide accurate figures for the file, checking invoices, sending bills and for future reference as to the amount of materials and labor needed for each job. The note book carried by the contractor is saved usualy but until full it is always in his pocket and inaccessible to clerks or those running his office. And again, each job is, in a sense, figured twice, once when the Estimate is given and again when the bill is made out, or at least the surface must be figured over again to know how much materials to send out to the job. Both times require the personal attention of the contractor himself whereas if he had filled out a printed Estimate Blank when he first looked at the job and then turned it over to his clerk a permanent record would be on file from which instructions to the foreman, the bill of materials and the bill to the customer could be made out. The time sheets of the men and invoices for materials could also be checked here and any discrepancy noted either in cost or amount of material and labor. The contractor himself would not be required to give so much of his own time to details which a clerk could do just as well under a proper system. More time is required to make out the Estimate Blank than to figure in a note book, but the advantage of having an accurate record of the cost, or the estimated cost, of each job is considerable and you also know the amount of profit on each job.

Figure No. "X" is an average house both in size and shape. It is thought that the best way to make an estimating method clear in words is to actually submit an estimate for painting the house shown. The estimate will be based on labor and material market conditions at this writing. The method would be substantially the same for any building anywhere, but material and labor prices would necessarily be changed to accord with local conditions.

Measuring the Building.

Section No. 6.

THE BODY. Starting at the nearest corner measure completely around the main body of the house with a tape line, excluding porches, but include the rear addition. Write down on your estimate blank or note book the length of the first side—24 feet, the length of the addition—8 ft., the width of the rear end of the house—22 ft., the length of the opposite side—24 ft., length of the addition—8 ft., and the width of the front—22 ft. Then add together, 24+8+22+24+8+22=108 ft. around the house.

Now measure the height of the corners to the eaves, using a long pole—a fish pole with a hook on the end is good, to fasten your tape line to and reach the top. This height will be 20 feet for the house shown.

To calculate the number of square feet in this main portion of the house multiply the circumference—108 ft. by the height—20 ft: 108x20=.....2,160 sq. ft.

It will be seen that no reduction has been made for window and door openings. Wall spaces are usually measured solid, it being estimated that the time consumed in cutting around sash, frames, etc., is as great as would be required in painting a smooth surface the size of the opening. If the openings are small and numerous, or if there are a great many small lights to be cut around, an additional charge of one or two cents per square yard is made.

THE GABLES. Next measure the main roof gable. Crawl out on the porch roof and use the fish pole and tape line. Get the distance from the peak or ridge down to a point level with the top of the corners where the roof joins under the eaves,—it will be 8 feet. We already know that the front is 22 feet wide. The number of square feet in the gable will be found by multiplying one-half the height—8 ft.,—by the width—22 ft. 4 ft. x 22 ft=88 sq. ft. for one gable. The two gables then measure ..... 176 sq. ft.

THE PORCH GABLE measures 4 ft. high and the porch is 22 ft. wide: 2 ft. x 22 ft.=..... 44 sq. ft.

THE FRONT PORCH. By measuring the front porch with the tape line you will find the size to be 10 ft. wide and 22 ft. long. The porch floor figures then 10 ft. x 22 ft.=..... 220 sq. ft.

THE PORCH CEILING is the same size ..... 220 sq. ft.

THE FRONT STEPS measured will be found 8 ft. wide. To get the measure

up and down fasten the end of your tape line at the edge of the porch floor. Then measure down the first riser to the top of the first tread, across the tread and down the second rise. Continue to the bottom and your total measure will read about 9 ft. The square measure then is
8 ft. wide x 9 ft. high=..... 72 sq. ft.

THE SIDE ENCLOSURE of the front steps will be found 4½ ft. high by 5 ft. long. The square measure is
5 x 4½=..... 22 sq. ft.
The tops and ends will measure:
5 ft. long x 1 ft. wide=5 sq. ft.
4 ft. high x 1 ft. wide=4 sq. ft.

Per enclosure.....9 sq. ft.
Two enclosures ..... 18 sq. ft.

FRONT PORCH COLUMNS will measure: 1 ft. x 1 ft. x 7 ft. high=7 sq. ft. per side. 4 sides at 7 sq. ft. each=28 sq. ft. 3 columns at 28 sq. ft. each=..... 84 sq. ft.

If columns were round they could be measured with the tape line stretched around to get circumference. Then the reading from the tape in inches should be multiplied by the height in inches. For example if a round column 10 inches in diameter was measured with the tape it would be found to be 32 inches in circumference. Then if it was 7 ft. high the calculation would be:
32 in. x 84 in. (7 ft.)=2,688 sq. in.
1 sq. ft.= 144 sq. in.
Then 2,688 sq. in. ÷ 144=18.66+ sq. ft.
Call it 19 sq. ft. per column.

THE PORCH CORNICE FACE. It will measure 1 ft. wide x 51 ft. around= 51 sq. ft.

THE PORCH EAVES—Underside, will measure 2½ ft. x 51 ft.— ..... 127 sq. ft.

THE SPINDLES AND PORCH RAIL should be figured as a solid flat surface of two sides. This will measure 29 ft. long x 3 ft. high—87 sq. ft. per side. Two sides— ..... 174 sq. ft.

THE LATTICE work below the front porch will measure 29 ft. long x 4½ ft. high—130 sq. ft. per side. Two sides— ..... 260 sq. ft.

THE CORNICE FACE on the main roof will be found to measure 12 inches on the fact and 118 ft. around the house all sides. The square measure then is 1 ft. x 118 ft.— ..... 118 sq. ft.

THE CORNICE—UNDERSIDE or eaves on the main roof measure 2½ ft. wide, the overhang. The square measure to paint then figures 2½ x 118 ft. around the house— ..... 295 sq. ft.

THE REAR PORCH will measure 6 ft. x 8 ft.— ..... 48 sq. ft.

THE REAR STEPS measure same as the front steps ..... 72 sq. ft.

TOTAL ..... 4,161 sq. ft.

It is customary to add 10% of the flat surface to the total to allow for the edges of siding ..... 416 sq. ft.

GRAND TOTAL AMOUNT OF SURFACE TO PAINT ..... 4,577 sq. ft.

Measuring the Surface—From Plans.
Section No. 7.

Architects differ more or less in their general requirements for painting and decorating as set forth in specifications. They also vary considerably in the language used to specify different finishes and treatments.

Some Specifications and plans are complete in every detail,—they show or mention everything that is to receive the paint contractors' attention but many specifications are not complete. Often the architect expects the painter to paint panel backs, storm sash and doors, backs of window frames, the underside of porch floors, basement store rooms, fruit cupboards, etc., not shown on plans nor mentioned in Specifications.

The best way for you to proceed then is to go through the Plans and Specifications systematically and write down in your note book first every detail mentioned as your work. Make note of the number of coats, the color, kind of material, etc.

Read over the Specifications for the Carpenter, Plumber, Millman and others, the plasterer's figures may be of help to you. Note in your book on another page any painting about the house that must be done sometime but not mentioned as your work. When you are sure your notes include everything, ask the architect who is to do these other jobs. Ask him also to explain any details about your work that were not made clear. It is a simple matter to adjust differences between your understanding of the Specifications and his before the work is done but

not so after. Extras probably cause more difficulties to arise between painter and architect, owner and general contractor than any other feature of a contract. Here are some of the questions that ought to be clear in your mind before beginning the contract:

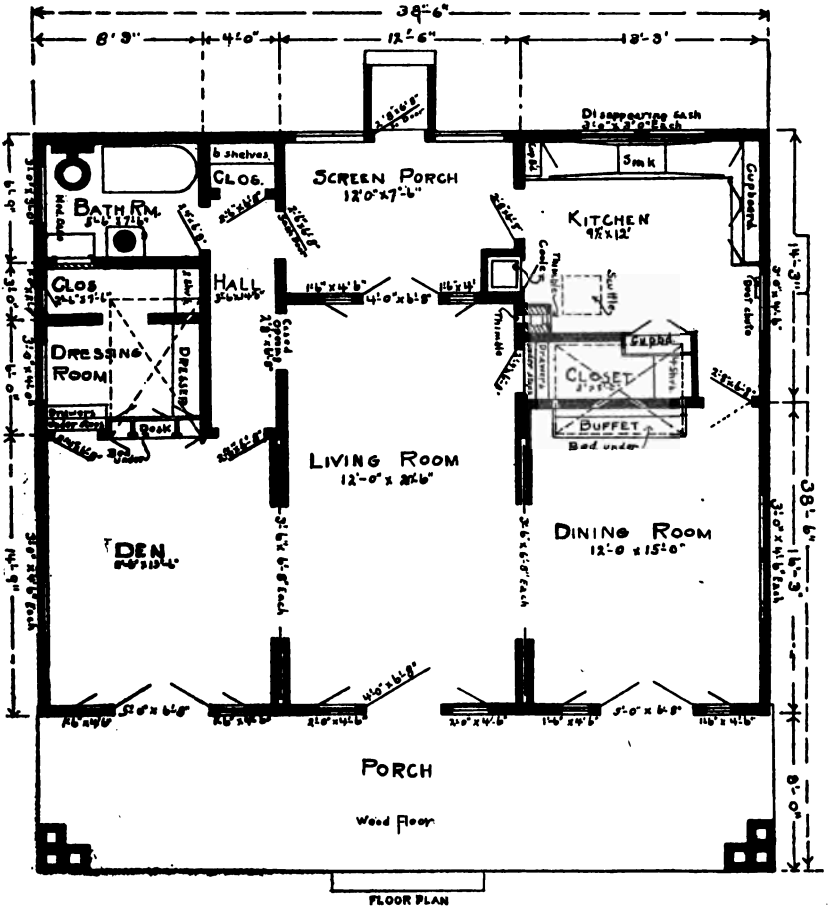
Is the roof to be painted? Stained? If so, how many coats? If stained are the shingles to be dipped only, dipped and brush coated or brush coated only? What kind and color stain? Are you to do the dipping or will the carpenter contractor do it? How about the shingles on the side of the house—gable or second story? Are they to be painted or stained? Are you expected to do the glazing? Who furnishes the glass? Are there any wood sheds, barns or fences to be painted?

Reading Plans.

Section No. 8.

Each plan or blue print is drawn to scale,—that is, each inch, half-inch or quarter-inch on the plan represents a foot or stated number of feet on the finished building.

Plans are always marked something like the plans for a bungalow shown here, thus:—"Scale for plans and elevations, 1 inch equals 4 feet. Details, 1 inch equals 1 foot and 1 inch equals 2 feet or ½ inch equals 1 foot." To explain, this means that when you place a rule on the plans shown in Figure A, B, C and D every inch equals 4 feet on the finished house. If you want to know how high the corners are lay your rule on the right hand corner of Figure B, and you will find that it measures 2¼



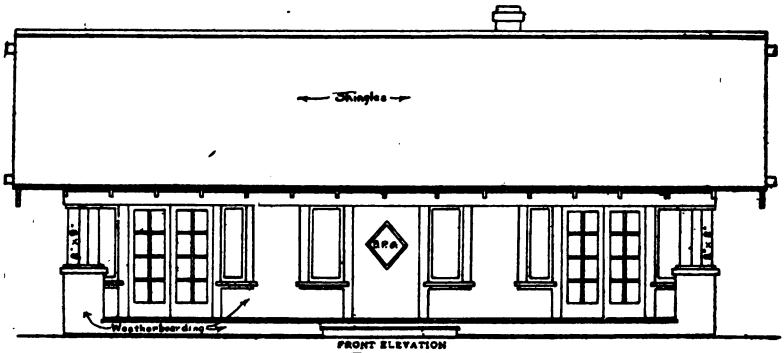
FLOOR PLAN

FIGURE "A"

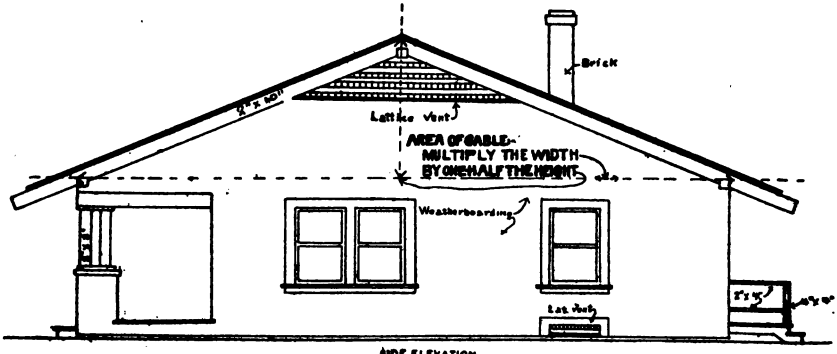
Scale

1 inch = 4 feet. ½ inch = 1 foot.

Walls: Outside, 1 foot thick. Inside, 8 inches



FRONT ELEVATION
Figure "C"



SIDE ELEVATION
Figure "B"
Scale:
1 inch equals 4 feet

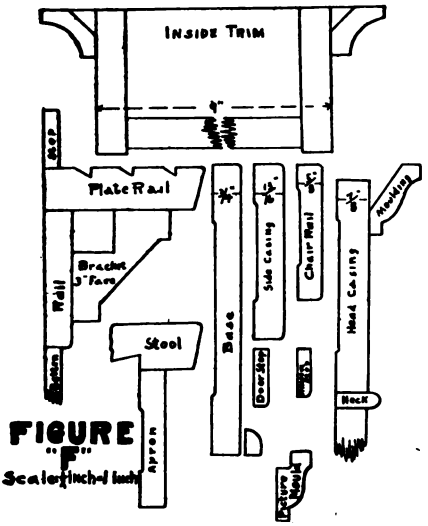
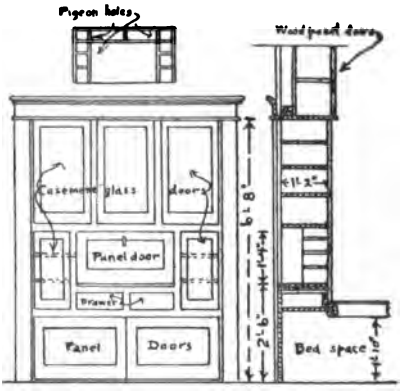


FIGURE "F"
Scale: 1 inch = 1 inch



DESK & BOOK CASES
Scale: ½" = 1'-0"
FIGURE "G"

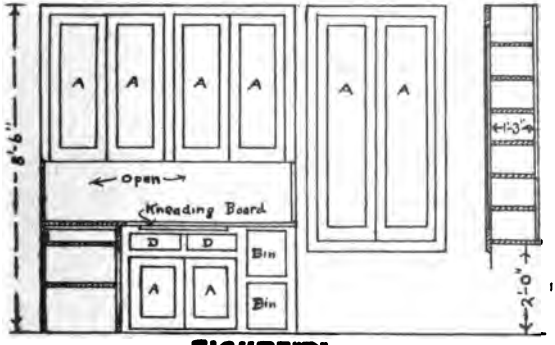
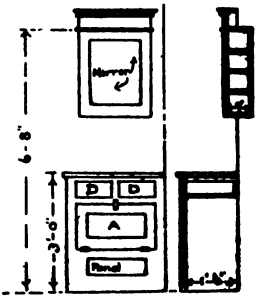
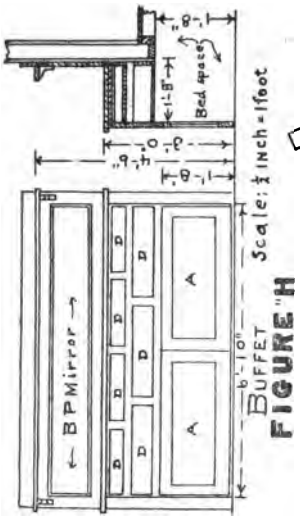


FIGURE "D"
CUPBOARDS
Scale: ½ inch = 1 foot



MEDICINE & LINEN CASES
FIGURE "E"
Scale: ½ inch = 1 foot



BUFFET

FIGURE "H"

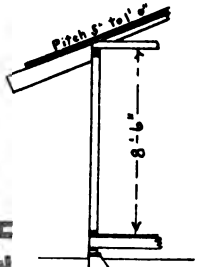
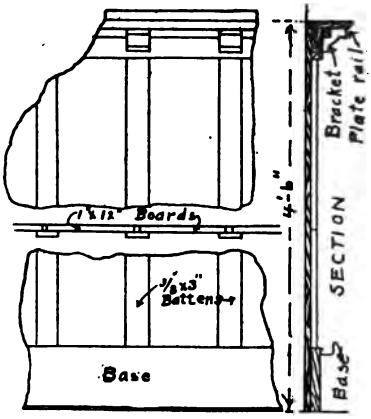


FIGURE "J"



ELEVATION of WAINSCOTING
DINING ROOM
SCALE 1"=1'-0"

FIGURE "I"

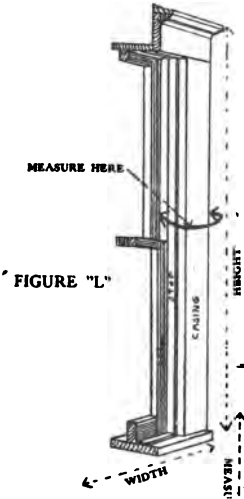


FIGURE "L"

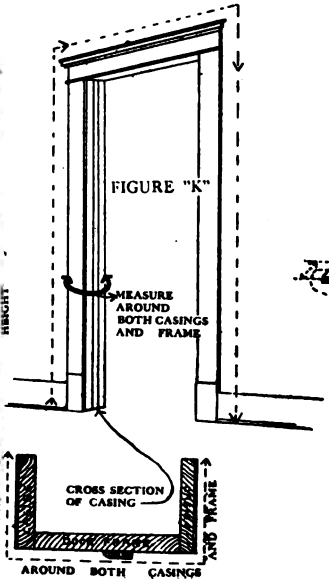
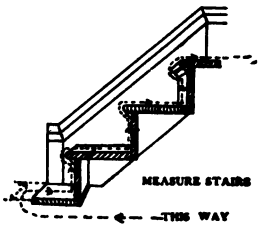


FIGURE "K"



inches. Then according to the scale (which says 1 inch equals 4 feet) you would multiply 2¼x4, which amounts to 9. The side wall or corner then is 9 feet high up to the point where the roof joins the corner.

The method used on plans to indicate feet and inches must be watched carefully as an expensive error may easily be made by mistaking feet for inches.

Ten feet would be indicated thus 10′.
Ten inches " " " " 10″.

A measurement reading 16′0″ x 1′4″ means 16 feet and no inches by 1 foot and four inches.

Painters often designate the measure of a surface as so many "Squares." A Square equals a space 10x10 feet or 100 square feet.

A square yard equals a space 3x3 or 9 square feet.

A square foot, 12x12 inches, equals 144 square inches.

The area of any flat surface to be painted is found by multiplying the heighth in feet by the width in feet. The result is square feet.

Taking Off the Quantities.

Section No. 9. Plans shown in Figures "A," "B,"

THE BODY. Looking at floor plan Figure "A" it will be seen that the building is 38 ft., 6 in. long and 38 ft., 6 in. wide. The circumference around the house would then measure:

One Side	38½ ft.
" "	38½ ft.
Front	38½ ft.
Back	38½ ft.
	154 ft. around the house.

Now measure the right hand corner on the Side Elevation, Figure "B," and it will show 2¼ in. high to where the roof joins. The Scale shown on the Plan says 1 in. equals 4 ft., so 2¼ x 4= 9 ft. high.

The side walls, the rear and front measure 154 ft. around and 9 ft. high. The square measure then is 9 x 154=1,386 sq. ft.

THE GABLES on the Side Elevations. "To figure the area of any gable multiply the width by one-half the height." For the plan we are figuring the length of the house from corner to corner will be the base or width of the gables — the floor plan, Figure "A," shows this measure to be 38½ ft. To get the height of the gable place your rule across the plan parallel to the floor line on the Side Elevation, Figure "B," but at the top of the corners where they join the roof. Draw a light pencil line there. Now lift the rule and measure from the ridge pole down to the pencil line just made. You will find that it is just 2 inches. According to the Scale on the plan then (1 in. equals 4 ft.) the height of gable is 2 x 4=8 ft.

Now the formula given to get the area of a gable says multiply the width, 38½ ft., by one-half the height, 8 ft. The calculation then is 38½ x 4=154 sq. ft. There are two gables, one on each side, so we must multiply 154 x 2= 308 sq. ft.

THE ROOF CORNICE FACING. The Side Elevation, Figure "B," shows the cornice to be 2 in. thick and 10 in. wide. Add these figures, 10+2=12 in. Now measure the length of this cornice from one end up to the ridge and down to the other end and you will find that it is 12¼ in. long. Using the scale again—(1 in. equals 4 ft.) to find the length of the cornice in feet multiply 12¼x4=49 ft. The plan shows that the width and thickness of the cornice are 10 in. and 2 in., which makes the equivalent of a board 12 inches or one foot wide to paint. The square measure on the cornice then is 1 ft. wide x 49 ft. long= 49 sq. ft. There is another cornice on the other side of the house so we must multiply 49 sq. ft. by 2=..... 98 sq. ft.

THE EAVES or underside of the Roof Cornice, according to Figure "B," overhangs ¾ of an inch. The Scale on the Plan says 1 in. equals 4 ft., so ¼ in. must equal 1 ft. The Eaves then overhang 3 ft.—they are 3 ft. wide. Measuring the Roof on Figure "B" from the front to the rear over the ridge our rule reads 11¾ in., which figures—(1 in. equal 4 ft., ¼ in. equals 1 ft.) 11¾x4=47 ft. long. The underside of the Eaves is 2 ft. less than the cornice facing.

We figured above that the Eaves are 3 ft. wide so to get the number of square feet in one side we now multiply 47 ft. long x 3 ft. wide=141 sq. ft. There are two sides the same size so we multiply 141 sq. ft. x 2=..... 282 sq. ft.

Figure "C" measures across the Roof 10¾ in. 10¾ in. equals 43 ft. on the Scale. The Eaves in the front and rear overhang the same measure as the sides—3 ft. The square measure then is 43 ft. x 3 ft.=129 sq. ft. Multiply this by 2 for front and rear and we have 2x129=..... 258 sq. ft.

THE RIDGE BOARDS on the peak of the roof measured with the rule show 10¾ in. long on the plan which figures according to scale 43 ft. The width of the boards does not show sufficiently to measure on the plan but they are probably 6 in. wide on each side of the ridge which makes a surface to be painted of 1 ft. x 43 ft.=..... 43 sq. ft.

THE FRONT PORCH. Figure "A" shows the floor to be 8 ft. wide and 38½ ft. long. The square measure then is 38½x8=..... 308 sq. ft.

THE PORCH CEILING is the same size as the floor..... 308 sq. ft.

THE PORCH COLUMNS. Figures "B" and "C" show that there are 6 columns 8x8 in. square. Measuring on the plan with the rule the columns are ¾ of an in. high, which (on the Scale which says 1 in. equals 4 ft., and ¼ in. equals 1 ft.) means that the columns are 3 ft. high. The columns being 8 in. on each side will measure 32 in. around all four sides; 32 in. is very near 3 ft., so call each column 3 ft. around and 3 ft. high. The square measure then is 3x3=9 sq. ft. for each column. There are 6 columns so multiply 9x6=..... 54 sq. ft.

THE FRONT PORCH COLUMN SUPPORTS or pedestals measure on Figures "B" and "C" about 5/8 in. wide and 1 in. high. Transposing this by the Scale given it figures about 2½ ft. wide by 4 ft. high. 2½x4=10 sq. ft. per side. There are three sides (1 side was included when measuring the side of body)=30 sq. ft. for each support. There are two supports so we multiply 30x2= ..... 60 sq. ft.

THE FRIEZE BOARD above running across the top of the front porch above the columns measures 1 ft. wide x 38½ ft. long. The number of square feet then is 1x38½ so we will call it..... 39 sq. ft.

THE WEATHER BOARDING enclosing the space below the front porch floor measures in front 1 ft. x 33= 33 sq. ft.

The side or end boarding was included when measuring the sides of the body.

THE STEP ON FRONT PORCH measures 1x1x8 ft. and the square measure is= ..... 18 sq. ft.

THE REAR PORCH. Figure "A" shows it to be 3½x4 ft.=..... 14 sq. ft.

THE STEP TREAD AND RISERS are 3½x1 ft.=3½ sq. ft. each for 1 tread and two risers. 3x3½=10½ sq. ft., so call it..... 11 sq. ft.

THE TWO SILLS on the porch sides measure 1x4=4 sq. ft. each. There are two—so multiply 4x2= ..... 8 sq. ft.

THE REAR PORCH RAIL. Two pieces 4x4 in. x 2½ ft. high are equal to 1 piece 5 ft. long or 60 in. long by

16 in. wide. Then 16x60=960 sq. in. 144 sq. in. equal 1 sq. ft., so divide 960 by 144 and you get 6 2/3 sq. ft., so call it ..... 7 sq. ft.

Then the plan shows 4 pieces of 2x4 in. x 3½ ft. long, which are equivalent to one piece 14 ft. long. A 2x4 in. piece measures 12 in. or 1 ft around all four side—2+4+2+4=12 in., so you have the equal of a surface 1 ft. x 14 ft. to paint. 1x14=..... 14 sq. ft.

TOTAL ..... 3,249 sq. ft.

Add 10% of the flat surface to allow for the edges of the siding or weather boarding..... 324 sq. ft.

TOTAL SURFACE TO PAINT ..... 3,573 sq. ft.

To Figure the Amount of Material for a Job.
Section No. 10.

How Many Gallons from a Mix?
Section No. 11.

A 100 lb. keg of white lead bulks about 2¾ gallons. Then if you are mixing a batch of paint for old outside work it would figure about like this:

White Lead, 100 lbs.	—2¾	gals.	Cost		$8.00
Linseed Oil	—4½	"	"	at 70c	3.15
Turpentine, 1 pt.	— ⅛	"	"	at 60c	.07
Japan Drier, 1 pt.	— ⅛	"	"		.40
Total	7½	gals.	Cost		$11.62

$11.62 divided by 7½=$1.54 cost per gallon for white paint. If tinting colors are used add their bulk and cost to above figures.

How Much Surface Will One Gallon Cover?
Section No. 12.

The number of square feet covered by a gallon differs according to the kind and color of paint, the kind of surface, whether the thinner is oil, turpentine or varnish and to what extent it is brushed out.

A fine pigment will cover more surface than a coarse one.

An opaque pigment will hide or cover better than a semi-transparent pigment.

A dark colored paint will cover more surface than white and light tints.

Thin paint covers a greater surface than thick but does not hide the surface as well.

A gallon of any paint will cover less on a soft, porous, dry surface than on a hard, well-filled surface.

By brushing the paint out to the limit any paint will cover more surface than when it is simply flowed on or when brushed out ordinarily well.

Careful records made of painting done under ordinary working conditions with pure white lead and linseed oil paint show that the below figures are conservative and form a good basis upon which to figure Estimates. These figures do not represent the amount of surface covered per gallon for the priming coat alone, nor for the second coat alone, but rather each figure is an average between the two coats and includes both working from the ground and from a ladder. The proportion of the surface painted from the ground and from the ladder being the same as would occur when painting the average house. They include also the painting of window

and door casings, corner boards and such trim as ordinarily occurs on the side of a house.

Weatherboarding.

White Paint and Light Tints cover about 300 to 425 sq. ft. per gal., 1 coat.

Gray, Tan, Buff, Drab, Etc., cover about 300 to 500 sq. ft. per gal., 1 coat.

Smooth Matched Boards.

White Paint and Light Tints cover about 500 sq. ft. per gal., 1 coat.

Gray, Tan, Buff, Drab, Etc., cover about 660 sq. ft. per gal., 1 coat.

Brick.

White Paint and Light Tints cover about 225 sq. ft. per gal., 1 coat.

Gray, Tan, Buff, Etc., cover about 300 to 700 sq. ft. per gal., 1 coat.

Concrete.

Concrete surfaces as the forms come off and which have not been resurfaced with cement figure same as Brick.

Rough Cast and Stucco surfaces require considerably more paint: Gray, Tan, Buff, Drab, Etc., covers about 225 sq. ft. per gal., 1 coat.

To Figure the Amount of Labor for a Job.

Section No. 13.

What is a Day's Work?

Section No. 14.

How much surface will an average journeyman coat per hour and in a day of 9 hours? A distinction should be made between the amount of work a man can do in a contest or if he knows he is being recorded and the amount he will do day in and day out under average conditions.

Considerable difference exists in the number of square yards that will be coated by different journeymen in an hour or day. If you will figure the number of square yards coated in a day of nine hours by a gang of six men, for instance, and divide this number by six you are bound to get a fair average amount of work one man will do in nine hours. And then the number of square yards coated in 9 hours by one man divided by 9 will give the number of square yards an average journeyman will coat in one hour. Or keep a record of the number of square feet one man paints on several different jobs, different colors, kinds of lumber, weather and such conditions. Then add together the total number of square feet on all the jobs, also add together the total number of hours put in by the one man. Now divide the number of square feet by the number of hours and the result is the average number of square feet a painter will cover per hour. If you have a 9 hour day multiply that per-hour figure by 9 and you have the number of square feet a man will paint per day on an average.

Unquestionably it is better for each contractor to keep a record accurately of his jobs for a while and thus be able to establish his own standards, his own figures as to what is a day's work under conditions in his market than to use figures worked out in any other locality.

In order to give the new contractor some figures to start on and at least a fairly accurate basis upon which to figure his estimates the below figures are

given. They are not estimates or guesses but were arrived at in this way. The figures used by nine different contractors were added together. Some of these contractors do business in towns of about 500 population, some 10,000 and others in large cities:—

One	Contractor	figures	his	men	paint	108	sq.	ft.	per	hr.,	1	coat
"	"	"	"	"	"	150	"	"	"	"	"	"
"	"	"	"	"	"	133	"	"	"	"	"	"
"	"	"	"	"	"	144	"	"	"	"	"	"
"	"	"	"	"	"	166	"	"	"	"	"	"
"	"	"	"	"	"	185	"	"	"	"	"	"
"	"	"	"	"	"	192	"	"	"	"	"	"
"	"	"	"	"	"	140	"	"	"	"	"	"
"	"	"	"	"	"	108	"	"	"	"	"	"

9)1326(147 sq. ft.

Dividing 1,326 sq. ft. by 9 (there were 9 contractors) we find that the average man employed by all probably paints about 147 square feet per hour.

It should be stated here:—

that no two journeymen will paint the same amount of surface per hour or per day,

that surfaces differ according to the kind and condition of the lumber or old paint,

that a man will cover more surface per hour with dark colored paint than with white and light tints,

that the size and quality of the brush has an influence,

that the paint itself has an important bearing—as some pigments are coarse, they drag on the brush and don't hide the surface or spread easily,

that paint spreads out more freely and easily in warm than in cold weather,

that a dry, weather-beaten surface is slow to paint,

that a man will cover more surface working from the ground that from a ladder or scaffold.

But,—in spite of all of these differences it is possible and necessary to find an average amount of

surface, as it ordinarily runs, which an average journeyman will paint per hour and per day.

The tabulation of figures to follow may be taken as reliable and conservative. The work was accomplished under ordinary average conditions by a journeyman who is if anything a trifle slow but thorough. He was not trying to make a record. A 4 in. wall brush was used for all work.

Weatherboarding.

150 sq. ft. per hour, 1 coat Gray, Tan, Cream, Etc.
1,350 " " " day of 9 hours.

Smooth Matched Pine Boards.

200 sq. ft. per hour, 1 coat Gray, Tan or Cream.
1,800 " " " day of 9 hours.

Brick.

132 sq. ft. per hour, 1 coat light tints.
1,188 " " " day of 9 hours.

Cement Surfaces.

Ordinary concrete as it comes from the forms without having been resurfaced, figure the same as for Brick.

Rough Cast or Cement Stucco.

110 sq. ft. per hour, 1 coat, light tints.
990 " " " day of 9 hours.

Painting Difficult Surfaces—Extra Labor.
Section No. 15.

Consider the difficulty of getting at the work and then make an estimate. A third-story cornice is, of course, more difficult to paint, it will take more time than a first-story. Men will always brush on more

paint while working on the ground than from staging, ladders and scaffolds. Fear of falling and the difficulty of reaching part of the surface cut down the number of square feet painted per day per man materially.

Having these facts in mind while estimating the time required to paint a cornice, for instance, allow time and a half for a first-story cornice, double time for second story, triple time for third story and so on. Consider also that a cornice having many brackets and mouldings or considerable carving consumes more time in the painting than a plain cornice.

The following surfaces require extra time if not much extra material and more time should be figured for such details than for painting flat surfaces of equal area. Estimate or measure the time needed to paint the same number of square feet of flat surface as is contained in a window blind, for instance. Then when figuring time for blinds double or triple the amount needed for a flat plain surface according to how the blind is paneled or slatted, which makes painting slow.

You will always find many kinds of odd jobs for which there is no set or worked-out plan in estimating. Even the below list of common details and suggestions for the time to allow for each permit of your exercising good judgment according to the exact nature of the work.

First figure the following as plain, flat surfaces and then add to the time for painting each as suggested:

	—Allow—
Blinds	Double Time.
Shutters	Time and One-Half.
Fancy Cornices	Double, Triple or Quadruple if second or third story—hard to reach.
Mouldings	Time and One-Half.
Grills	Double or Triple Time.
Lattice Work	Triple Time.
Brackets	Time and One-Half or Double.
Doors	Double Time.
Door and Window Casings.	Time and One-Half.
Window Sash, Plain	Time and One-Half.
Window Sash, Fancy	Double to Triple Time.
Porch or Stair Balustrades, including Top and Bottom Rail	Quadruple Time.
Columns, Fluted	Time and One-Half.
Columns, Paneled	Double Time.
Tin Roofs, if seams are to be scraped and washed	Double Time.
Shingle Roof	Time and One-Half.
Ceilings, Wood Wainscoting	Time and One Half.
Ceiling, Steel, Simple Design	Double Time.
Ceilings, Steel, Fancy Design	Triple Time.
Ceilings, Steel, if walls not painted at the same time	Quadruple Time.
Stairs	Double Time.
Hand Rails	Double Time.
Steps—Treads and Risers	Double Time.

Rain Gutters and Spouts, according to difficulty of reaching	Double to Quadruple Time.
Steeples, Domes, Cupolas and Towers, according to difficulty of reaching	Double to Six Times.
Trellis	Double or Triple Time.
Fences, Picket	Quadruple Time.
Fences, Plain Board	Double Time.

Time Required Setting Stages, Ladders and Scaffolds.
Section No. 16.

More or less time is consumed getting things ready to paint. Ladders, scaffolds and stages must be set and moved around, so an allowance of time must be added also to the Estimate for this work. You are the best judge as to how much time to add.

Figure in the time for both erecting and taking down staging, scaffolds, etc., according to the difficulty of the work.

Time Required for Mixing Colors.
Section No. 17.

Where a man is not employed to remain at the shop and mix the paint for all jobs the time of the man on the job required to do the mixing should be added to the actual time figured to coat the surface. The amount of time consumed to do the mixing differs, of course, according to the number of colors to be mixed and the time taken by the lady of the house to decide. The task will seldom require less

than half an hour and will range from that to two or three hours. Use your judgment as to how much time will be consumed in this way on each job.

Burning and Scraping Scaled Paint.
Section No. 18.

All preparatory work of this nature should be day work on the time and material basis. The labor or time required to remove old paint and prepare a surface for repainting where the old paint is cracking and scaling cannot be even fairly well estimated before the work is performed. Certain kinds of paint can be stripped off continuously like a banana peel while the paint on other jobs where there have been many coats of hard pigment put on from time to time the scraping is slow work, as the old coats must be dug off a foot or two at a time. On windy days it is difficult to keep the surface hot with a torch and the work goes slowly. The skill of the mechanic doing the work is also a factor to be figured on. There is quite a little knack to handling the torch and scraper rapidly.

Extras.
Section No. 19.

Make it a point always to ask if the Roof, Blinds, Storm Sash and Doors, Screens, Fence, Barn, Foundation or other work of this nature is to be painted and include in your Estimate.

Burning and scraping off scaled paint, preparing such a surface, ought to be considered an extra and figured on the time and material basis.

Your letterhead and other stationery should have

printed on them at the top or bottom that the above items are properly extras and will be charged for as such unless mentioned and included in the original estimate.

Making Up the Estimate—Exterior.
For House in Figure No. "X."
Section No. 20.

LISTING THE MATERIAL. By referring back to Section No. 6 it will be seen that the surface to be painted on this house amounts to 4,577 square feet. It is not a new house so probably two coats of paint would be put on.

The first step is to figure the amount of material needed. In Section No. 12 it will be seen that when painting weather-boarding a gallon of paint usually covers about 500 sq. ft., one coat if the color selected is about as dark as Gray, Tan, etc. We will then find out how many gallons of paint are needed by dividing the number of square feet to be painted (4,577) by the amount of surface one gallon of paint may be expected to cover (500).

500)4577(9.15+

We find that a trifle over 9 gallons are needed for one coat, or 18 gallons for two coats.

It should be kept in mind that 100 lbs. of white lead will make from 7 to 10 gallons of paint, according to how mixed. See Section No. 11. We know then that this job will need at least 200 lbs. of lead. Suppose it is mixed as follows to make a gray paint:

200 lbs.	white lead	5½ gals.
4 "	raw umber	½ "
	A little lampblack.	
9 gals.	linseed oil	9 "
1 "	turpentine	1 "
		16 gals.

The formula to make the shade of gray selected gives us but 16 gallons of paint and we need 18 gallons. We will add to the formula then about 25 lbs. of lead, ½ lb. raw umber and 2 gallons of oil, which will produce roughly about 2½ gallons of paint and make the total the 18½ gallons needed.

Other materials needed in addition to that included in the formula given are:

2 lbs. putty,
1 pt. shellac,
6 sheets sandpaper.

LISTING THE LABOR. The slow or difficult work on this house (Figure X) consists of the details below. It will require a longer time to paint these surfaces than an equal area of weatherboarding because they are hard to get at. Figure extra time for such work as per Section No. 15.

Eaves, Front Porch=	127		sq. ft.
This is a plain cornice.			
Figure time and one-half, 127x1½=		190	" "
Cornice Face, Front Porch=	51		" "
Figure time and one-half, 51x1½=		76	" "
Spindles, top and bottom rail on Front Porch=	174		" "
Figure quadruple time, 174x4=		696	" "
Lattice—Front Porch=	260		" "
Figure triple time, 260x3=		780	" "
Eaves, Main Roof=	295		" "
Figure time and one-half, 295x1½=		442	" "
Cornice Face, Main Roof=	118		" "
Figure time and one-half, 118x1½=		177	" "
	1,025	2,361	sq. ft.

It should be noted now that the figure 1,025 sq. ft. is the correct area of surface for all of these details while 2,361 sq. ft. is the area which represents the extra time needed to paint these details. In other words the 1,025 sq. ft. of surface are so hard or slow to get at that it takes as much time, but not as much material, to paint 1,025 sq. ft. so located as it does to paint 2,361 sq. ft. of surface easy to get at.

In Section No. 14 you will find that an average journeyman will paint about 150 sq. ft. per hour, one coat, with a gray paint on weather-boarding. To calculate the total number of hours labor required to paint all of these slow or difficult details we divide the area 2,361 sq. ft. by the number of sq. ft. per hour that one man may be expected to paint,—150.

Divide 2,361 sq. ft. by 150 and you have 15.74. A little less than 15¾ hours are needed to paint the difficult work on the house. Call it 16 hours.

The total area of the whole house including the difficult details just figured is given in Section No. 6 as 4,577 sq. ft. Before we attempt to figure the labor time for painting the house, except the above difficult details which we just figured would require 16 hrs. to paint, we must deduct the correct area of such details (1,025 sq ft.) from the total,—that is 4,577 minus 1,025=3,552 sq. ft.

We expect a journeyman to paint 150 sq. ft. of this surface per hour, one coat. Dividing 3,552 by 150 we find that 23.68 hours, call it 24 hours, are needed to paint the surface, not including the difficult portions of the work figured above as requiring 16 hrs.

The time one man would take to paint this house one coat then is 16 hours for the slow difficult work such as the cornice, lattice, etc., and 24 hours for the body and details not difficult to get at, 16 hours plus 24 hours=40 hours in all. The house is to have two coats, so 80 hours are needed by one man, or 40 hours by two men.

The time to allow for everything about the job then is:

Painting	80	hrs.
Mixing Paint	2	"
Handling Ladders, Etc.	2	"
Putty and Clean-up	2	"
Total	86	hrs.

When it is necessary to burn and scrape off all or part of old paint this work should be designated in writing as an "extra" at the time your price is given to the house owner. To be charged for on the time and material basis. You cannot guess or estimate the time needed to prepare a surface of this kind.

The Estimate Complete.
Erterior House, Figure "X."
Section No. 21.

The Material Prices and Wage Scale of 50c per hour used will, of course, change according to conditions in different localities but the method of figuring should remain the same anywhere.

Material Cost.

White Lead, 225 lbs., at 8c a lb.	$18.00
Linseed Oil, 11 gals., at 70c gal.	7.70
Turpentine, 1 gal., at 60c gal.	.60
Colors, 4½ lbs., Raw Sienna, at 22c lb.	.99
Putty, 2 lbs., at 3½c lb.	.07
Shellac, 1 pt.	.25
Sandpaper, 6 sheets	.06
	$27.67

Labor Cost.

86 hours at 50c per hour $43.00

Overhead Expense.

Add 15% of Material Cost $27.67
Labor Cost 43.00

$70.67
.15%

35335
7067

$10.6005 $10.60

Profit.

Add whatever per cent. or amount you think you ought to have. For an illustration we will add as profit 20% of:—

Material Cost $27.67
Labor Cost 43.00

$70.67
.20%
$14.1340

For Profit $14.13

Price to give House Owner $95.40

Making up the Estimate—Exterior. For Bungalow in Figure "A," "B," "C." Section No. 22.

LISTING THE MATERIAL. Section No. 9 shows that the surface area to be painted is 3,573 sq. ft.

Section No. 12 shows that on weather-boarding a gallon of paint of Light Gray, Tan, Buff or Drab color may be expected to cover about 500 sq. ft. one coat.

To calculate the number of gallons of paint needed then divide 3,573 sq. ft. by 500 and the result—7.12+ is the number of gallons,—call it 7 gallons even, or 14 gallons for two coats.

One hundred pounds of white lead makes from 7 to 10 gallons of paint, according to colors and thinners used. Assuming that the color wanted is a Drab the formula would be about like this:

White Lead, 100 lbs.—	2¾ gals.
French Ochre, 2 lbs.	
Raw Umber, 2 lbs.	
Linseed Oil	4½ gals.
Turpentine	½ gals.
Produces	7¾ gals. paint for 1 coat

Two coats, double above material and you will get 15½ gallons of paint. Other materials needed are:

Putty, 2 lbs.
Shellac, 1 pint.
Sandpaper, 6 sheets.

LISTING THE LABOR. The slow or difficult work on this house (Figure "A," "B," "C") consists of the following details. It will require a longer time to paint these surfaces than an equal area of weather-boarding because they are hard to get at.

Figure extra time for such work as per Section 15.			
CORNICE FACING=	98 sq. ft.		
Figure Time and One-Half, 98x1½=		147	sq. ft.
EAVES, SIDES=	282 " "		
Figure Time and One-Half, 282x1½=		423	" "
EAVES, Front and Rear=	258 " "		
Figure Time and One-Half, 258x1½=		387	" "
RIDGE BOARDS=	43 " "		
Figure Time and One-Half, 43x1½=		64	" "
	681 sq. ft.	1,021	sq. ft.

The figure, 681 sq. ft., is the actual measure of the surface to paint, while 1,021 sq. ft. represents the basis upon which to figure the time. In other words the 681 sq. ft. are so hard or slow to get at that it takes as much time to paint 681 sq. ft. so located as it does to paint 1,021 sq. ft. of surface easy to get at.

In Section No. 14 you will find that an average journeyman will paint about 150 sq. feet per hour, one coat, with Gray paint on weather-boarding.

To calculate the time required to paint the above listed slow details divide the area of all—1,021 sq. ft. by 150. This figures 6.80+ hours or nearly 7 hours; call it 7 hours.

The total area of surface to paint on the entire house is 3,573 sq. ft. We have already figured the time required to paint part of this,—the slow work amounting to 681 sq. ft., so we shall deduct 681 from 3,573 leaving 2,892 sq. ft.

To find the number of hours time required to paint this last figure we divide 2,892 by 150 sq. ft. and the result is 19.28 hours; call it 20 hours for one man to apply one coat.

We have then 7 hours for painting the slow details and 20 hours for coating the balance. A total of 27 hours for the whole house for one coat by one man. Two coats would then require 54 hours for one man to accomplish the work. Two men would do it in 27 hours.

The time to allow for everything about the job then is:

Painting	54	hrs.
Mixing	2	"
Handling Ladders, etc.	1	"
Putty and Clean Up	2	"
Total	59	hrs.

The Estimate Complete.
Exterior Bungalow, Figure "A," "B," "C."
Section No. 23.

The material prices and the wage scale of 50c per hour used will, of course, change according to conditions in different localities, but the method of figuring should remain the same anywhere.

Material Cost.

White Lead, 200 lbs., at 8c lb.	$16.00
French Ochre, 4 lbs., at 9c. lb.	.36
Raw Umber, 4 lbs., at 14c lb.	.56
Linseed Oil, 9 gals., at 70c gal.	6.30
Turpentine, 1 gal., at 60c gal.	.60
Putty, 2 lbs., at 3½c lb.	.07
Shellac, 1 pint	.25
Sandpaper, 6 sheets	.06
	$24.20

Labor Cost.

59 hours at 50c per hour $29.50

Overhead Expense.

Add 15% of:

Material Cost	$24.20	
Labor Cost	29.50	
	$53.70	
	.15%	
	26850	
	5370	
	$8.0550	$ 8.05

Profit.

Add whatever percent or amount you think you ought to have. For an example we will add 20% of:

Material Cost	$24.20	
Labor Cost	29.50	
	$53.70	
	.20%	
	$10.7400	
For Profit		$10.74
Price to give House Owner		$72.49

CHAPTER IV.
ESTIMATING—INTERIOR.

Greater care is necessary when figuring interior decorating than need be given outside painting because with the great number of different finishes, the many kinds of wood now being used for trim and the various degrees of workmanship expected it is difficult to know just what to figure on. The slap-dash hurry-up jobs of real estate and professional builders is wanted in some instances, or at least nothing better will be paid for, while on other specifications moderately good to the best of workmanship is required. Architects and general contractors are not different than other mortals and when they are lax, vague or indefinite in their written or verbal specifications, make them explain clearly what they expect and get it in writing; if they will not write it, you do so. Find out **before** you submit your Estimate:

Who is to bronze the radiators, what materials are to be used and how many coats?

If enamel is specified, is it to be white, ivory or some other tint? How many coats, how much and what kind of rubbing? Satin or Gloss Finish?

What kind of wood trim to be used?

Who is to do the glazing and who furnishes the glass?

Is the interior trim to be primed or stained before putting up?

If the cove moulds, chair rail or picture moulds are to be painted, when, before or after the paperhanger finishes?
Any painting in the basement?
If walls are to be painted is canvas or muslin to be put on first? Any stencils?
What, if any, preparatory work, cleaning, surfacing, etc.?

There are so many ways to finish interior trim that it is really important to learn from the architect, general contractor or owner the exact finished effect expected if the specifications don't show unmistakably what is wanted. Remember that words describe color effects only fairly well at best so it is always safest to get their O. K. from samples of the tinted paint or stain spread on pieces of the trim left over by the carpenters.

Furthermore, if when estimating you figure on rubbing with pumice and oil or water whereas a light rub with steel wool is all that is expected your Estimate may be high enough to lose the job. And on the other hand if you figure on a steel wool rub and are required to rub with pumice your profit will be cut down considerable when you get the job.

Unit System of Estimating.
Section No. 24.

The first jobs of a contractor had better be figured only on the basis of the actual number of square feet in each door, window, blind, column, etc., to be painted. After a while, however, the estimator learns that all doors, windows and such details are of approximately the same size within a few inches.

He remembers from previous measurements that the door before him contains about so many square feet and it will cost about so much to paint it one, two and three coats. When one's memory develops to this point it is a time saver, and, of course, there is no further advantage in measuring each and every door, window and blind to be painted. But do not carry the unit system beyond a reasonable limit; it has its limitations like all good things and can be overdone. Out-of-the-ordinary doors, windows, etc., on old or exceptional buildings should always be measured accurately to have your estimate reasonably correct.

Reading Plans.
See Section No. 8.

Extras.
See Section No. 19.

TO CALCULATE THE AMOUNT OF MATERIAL.
Section No. 25.

Measuring the Rooms.
Section No. 26.

Measuring a house itself to calculate the amount of surface to be painted, stained, waxed or filled differs little from figuring the surface from Plans and Specifications. It is sufficient to say under this subject that the room itself is measured with a tape line. Take care to run the line into all corners, mouldings and such so as to get all of the surface,—figure too much rather than too little. Multiply height by width and put down in square feet all surface. See Section No. 27 to follow.

Measuring the Surface—From Plans.
Section No. 27.

The bungalow plans in Figures "A," "B," "C" will serve the purpose of illustrating the method.

Measuring Walls and Ceilings.
Section No. 28.

The Dining Room.

The ceiling ought first to be figured. Floor Plan, "Figure "A," gives the size of each room. The Plan reads 12 ft. wide and 15 ft. long for the dining room. These measurements are to the centers of the partitions. Outside walls are 1 foot thick, inside walls 6 inches. The area of the ceiling then is 12x15 ft.= 180 sq. ft.

To find the area of the walls begin in one corner and measure all four sides of the room, add them together: 12+15+12+15=54 ft. around the room. The height of the ceiling is found on the Section, Figure "J" as 8 ft. 6 in. The baseboard is 7¼ in. high according to Figure "F" (the rule on it shows 3 5/8 in. The scale is ½ in. equals 1 in. For convenience call the ceiling 8 ft. high allowing the 6 in. for the baseboard.

The distance around the room, 54 ft., multiplied by the height, 8 ft., equals 432 sq. ft. of surface for the walls.

Contrary to the practice in exterior painting the openings on interior work should be deducted from this figure of 432 sq. ft. The door opening to kitchen is 2 ft. 8 in. by 6 ft. 8 in. Figure "F" shows the

casings are 4½ in. wide. Add to the width of the door opening the two casings which together are 9 in. wide. Add the width of one casing, 4½ in., to the height. The area to deduct then for this opening is 2 ft. 8 in.+9 in. by 6 ft. 8 in.+4½ in., or 3 ft. 5 in. by 7 ft. ½ in, call it. 3½x7 ft.=24 sq. ft.

The windows on the right side are marked 3 ft. wide by 4 ft. 6 in. high. Add the width of two casings (9 in.) and you have 3 ft. 9 in. by 5 ft. 3 in.; call it 4 ft. x 5 ft.=20 sq. ft. for each of two windows or 40 sq. ft. for both.

The opening on to the front porch measures 5 ft. by 6 ft. 8 in. Adding casings you have, 5 ft. 4½ in. by 7 ft. ½ in., call it 5½x7 ft.=38 sq. ft.

The small windows opening on to the porch are 1 ft. 6 in. by 4 ft. 6 in. Add the casings, 9 in., and you have 2 ft. 3 in. by 5 ft. 3 in., call it 2 ft. x 5 ft.= 10 sq. ft., each window. Two windows=20 sq. ft.

Door opening into the living room shows 7 ft. wide by 6 ft. 8 in. high. Add casings and you have 7 ft. 9 in. by 7 ft. ½ in., call it 8 ft. x 7 ft.=56 sq. ft.

The buffet is 6 ft. 10 in. wide by 4 ft. 6 in. high on Figure "H," call it 7 ft. x 4½ ft.=31 sq. ft.

In all then we want to deduct:

1 Door	24	sq. ft.
2 Windows	40	" "
1 Door	38	" "
2 Windows	20	" "
1 Door	56	" "
Buffet	31	" "
	209	sq. ft.

SUMMARY

The Walls	432	sq. ft.
The Ceiling	180	" "
	612	" "
Deduct Openings	209	" "
Actual Surface to Paint	403	" "

The Living Room.

Plan shows 12 ft. wide. The rule placed on the floor plan Figure "A" reads 5⅛ in. The Scale reads 1 in. equals 4 ft. The room then is 20½ ft. long.

The ceiling is 20½x12 ft.—246 sq. ft.

The Walls figure: 20½+12+20½+12—65 ft. around the room. Walls are 8 ft. high so we have 65x8= ..... 520 sq. ft.

The openings to deduct are:

1	Door and Casing	4 ft.	9 in.	x	7 ft.	½ in.	Call	it	5x7 ft.	=	35	sq.	ft.
1	" " "	2 "	8 "	x	6 "	8 "	"	"	3x7 "	=	21	"	"
1	" " "	7 "	9 "	x	7 "	½ "	"	"	8x7 "	=	56	"	"
1	Window and Casing	2 "	9 "	x	5 "	½ "	"	"	3x5 "	=	15	"	"
1	" " "	2 "	9 "	x	5 "	8 "	"	"	3x5 "	=	15	"	"
1	Door and Casing	4 "	9 "	x	7 "	½ "	"	"	5x7 "	=	35	"	"
1	" " "	7 "	9 "	x	7 "	½ "	"	"	8x7 "	=	56	"	"
1	" " "	3 "	1 "	x	7 "	½ "	"	"	3x7 "	=	21	"	"
	TOTAL										254	sq.	ft.

SUMMARY

Walls	520	sq. ft.
Ceiling	246	" "
	766	" "
Deduct Openings	254	" "
Actual Surface to Paint	512	" "

The Den.

The Plan shows it to be 11½ ft. by 13½ ft., which equals 155 sq. ft. for the ceiling.

Measuring around the room we have 11½+13½+11½+13½ ft.—50 ft. for the walls. Multiply by the height of the ceiling, 8 ft.; 50x8—400 sq. ft. for the walls.

The openings to deduct are:

1	Door and Casing	3 ft.	3 in.	x	7 ft.	½ in.	Call it	3x7½ ft.	=	22	sq. ft.
1	" " "	4 "	3 "	x	7 "	½ "	" "	4x7 "	=	28	" "
1	Window and Casing	2 "	3 "	x	5 "	3 "	" "	2x5 "	=	10	" "
1	" " "	2 "	3 "	x	5 "	3 "	" "	2x5 "	=	10	" "
1	Door and Casing	5 "	9 "	x	7 "	½ "	" "	6x7 "	=	42	" "
1	Window and Casing	6 "	9 "	x	5 "	3 "	" "	7x5 "	=	35	" "
1	Door and Casing	3 "	1 "	x	7 "	½ "	" "	3x7 "	=	21	" "
1	Desk (Figure G)	5 "	6 "	x	7 "		" "	5½x7 "	=	38	" "
	TOTAL DEDUCTIONS									206	sq. ft.

SUMMARY

Walls	400	sq.	ft.
Ceiling	155	"	"
	555	"	"
Deduct Openings	206	"	"
Actual Surface to Paint	349	"	"

The Kitchen.

The ceiling measures according to Figure "A" 12 ft. wide by 13 ft. when the closet ceiling is also included. 12x13= ..... 156 sq. ft.

The walls measure around 12+13+12+13—50 ft. The walls are 8 ft. high to ceiling.

50x8 for the walls= ..... 400 sq. ft.

The openings to deduct are:

1	Door and Casing	3 ft.	5 in.	x	7 ft.	½ in.	Call it	3½x7 ft.	=	24	sq. ft.
1	Window and Casing	3 "	9 "	x	5 "	3 "	" "	4x5 "	=	20	sq. ft.
1	" " "	3 "	9 "	x	3 "	9 "	" "	4x4 "	=	16	sq. ft.
1	" " "	3 "	9 "	x	3 "	9 "	" "	4x4 "	=	16	sq. ft.
1	Door and Casing	3 "	5 "	x	7 "	½ "	" "	3½x7 "	=	24	sq. ft.
1	Cupboard	6 "	6 "	x	8 "		" "	6½x8 "	=	52	sq. ft.
	TOTAL									152	sq. ft.

SUMMARY

Ceiling	156	sq. ft.
Walls	400	" "
	556	" "
Deduct Openings	152	" "
Actual Surface to Paint	404	" "

Closet.

Ceiling included with Kitchen. Walls 8½+3+8½+3=23 ft. around the room. Walls are 8 ft. high; 23x8= ..... 184 sq. ft.

The opening to deduct:

1 Door and Casing 3 ft. 1 in. x 7 ft. ½ in. Call it 3x7 ft.=21 sq. ft.

SUMMARY

Walls	184	sq. ft.
Deduct Opening	21	" "
Actual Surface to Paint	163	" "

Bath Room.

Size on plan 5½ ft. by 7½ ft., which equals for the ceiling 41 sq. ft.

Walls 5½+7½+5½+7½=26 ft. around. The walls are 8 ft. high. 26x8=208 sq. ft.

The openings to deduct are:

1 Door and Casing	3 ft.	1 in.	x	7 ft.	½ in.	Call it 3x7 ft.	=21	sq. ft.
1 Window and Casing	3 "	9 "	x	3 "	9 "	" " 4x4 "	=16	" "
TOTAL							37	sq. ft.

SUMMARY

Ceiling	41	sq. ft.
Walls	208	" "
	249	" "
Deduct Openings	37	" "
Actual Surface to Paint	212	" "

The Hall.

Ceiling measures on plan 14½ ft. by 3½ ft., including the Closet at end. 14½x3½ ft.=50 sq. ft.

The walls measure around 3½+14½+3½+14½ =36 ft. They are 8 ft. high. 36x8 ft.=288 sq. ft.

The openings to deduct are:

1	Door and Casing			3 ft.	3 in.	x 7 ft.	½ in.	Call it	3x7 ft.	=21	sq. ft.
1	"	"	"	3 "	3 "	x 7 "	½ "	"	" 3x7	" =21	" "
1	"	"	"	3 "	1 "	x 7 "	½ "	"	" 3x7	" =21	" "
	TOTAL										63 sq. ft.

SUMMARY

Ceiling	50	sq.	ft.
Walls	288	"	"
	338	"	"
Deduct Openings	63	"	"
Actual Surface to Paint	275	"	"

Dressing Room and Closet.

Size of Ceiling on plan 7½ ft.x7½ft.—56 sq. ft.

Walls measure around 7½+7½+7½+7½—30 ft. They are 8 ft. high; 30x8—240 sq. ft.

Openings to deduct are:

1	Door and Casing			3 ft.	1 in.	x 7 ft.	½ in.	Call it	3x7 ft.	=21	sq. ft.
1	Window and Casing			3 "	9 "	x 4 "	9 "	"	" 4x5	" =20	" "
1	"	"	"	1 "	9 "	x 2 "	9 "	"	" 2x3	" = 6	" "
	TOTAL										47 sq. ft.

SUMMARY

Ceiling	56	sq.	ft.
Walls	240	"	"
	296	"	"
Deduct Openings	47	"	"
Actual Surface to Paint	249	"	"

Rear Screen Porch.

Size of ceiling 7½x12 ft.=90 sq. ft.

Walls 7½+12+7½+12 ft.=39 ft. around. Walls are 8 ft. high. 8x39 ft.=312 sq. ft.

Openings to deduct are:

1 Door	2 ft. 8 in.	x 6 ft. 8 in.	Call it	3x7 ft.	=21 sq. ft.
2 Doors	2 " 6 "	x 6 " 8 "	" "	3x7x2 "	=42 " "
1 Door	4 "	x 6 " 8 "	" "	4x7 "	=28 " "
TOTAL					91 sq. ft.

SUMMARY

Ceiling	90	sq. ft.
Walls	312	" "
	402	" "
Deduct Openings	91	" "
Actual Surface to Paint	311	" "

Total Wall and Ceiling Area.

Dining Room	403	sq. ft.
Living Room	512	" "
Den	349	" "
Kitchen	404	" "
Closet	163	" "
Bath	212	" "
Hall and Closet	275	" "
Dressing Room and Closet	249	" "
Screen Porch	311	" "
	2,878	" "

Measuring the Floor Area.
Section No. 29.

(Same as Ceilings.)

THE DINING ROOM FLOOR. Figure "A" shows it to measure 12 ft. wide by 15 ft. long, which equals ..... 180 sq. ft.

THE LIVING ROOM FLOOR. Size 12 ft. by 20½ ft., which equals ..... 246 " "

THE DEN FLOOR. Size 11½ ft. by 13½ ft., equals ..... 155 " "

THE KITCHEN & CLOSET FLOOR. Size 12x13 ft., equals ..... 156 " "

THE SCREEN PORCH FLOOR. Size 7½x12 ft., equals ..... 90 " "

THE HALL & CLOSET FLOOR. Size 3½x14½ ft., equals ..... 50 " "

THE BATH ROOM FLOOR. Size 5½ x7½ ft., equals ..... 41 " "

DRESSING ROOM AND CLOSET FLOOR. Size 7½x7½ ft., equals ..... 56 " "

Total ..... 974 sq. ft.

Measuring the Wood Trim.
Section No. 30.

The Doors, Frames and Casings.

It is necessary to measure each door and window only a sufficient number of times to learn what the measurements usually are,—to have the sizes in mind or a typewritten list of them for reference. Divide all doors into three classes, small, ordinary size and extra large. Then figure only two sizes of

doors putting every door in one class or the other, as there is no practical difference in time or material required for doors 2 ft. 6 in., 2 ft. 8 in. and 3 ft. wide, so call these ordinary doors and figure all of one size, 2 ft. 6 in. wide by 6 ft. 6 in. high. All other doors ought to be measured. Usually there are but one or two doors of extra large size per house.

The Plan usually gives the size of the doors. To measure the surface of a frame and casing use a tape line to get the distance around from the edge of the casing on one side across the frame and casing on the other side, as in Figure No. "K." Most casings and frames are either 4 inches or 6 inches wide, so the average surface to finish is 16 or 18 inches wide—call it 1½ ft., a couple of inches one way or another makes no difference.

To get the length of the casing and frame, measure from the floor on one side up to the top of the frame, across the top and down again parallel to the casing on the other side to the floor, as in Figure No. "K." The average door is 6 ft. 6 in., or 8 in. high. Add the width of the casing on top (6 in.) and figure the average casing and door frame as 7 ft. high. To the width of the door opening, 2 ft. 6 in., add the width of the two casings, each 6 in., and you have the length of the casing across the top,—2 ft. 6 in. plus 6 in. plus 6 in.=3½ ft.

Calculating the square measure, then, for the casing and frame, you have it 1½ ft. wide by 7 ft. high. The length of the casing, both sides and across the top, is 7+3½+7=17½ lineal feet.

The Casing is 1½ ft. wide by 17½ ft. long= ..... 26 sq. ft.
The Door 2½ ft. wide by 6½ ft. high= 16 sq. ft. each side, 2 sides= ..... 32 " "

Each Door and Casing, 2 sides= ..... 58 sq. ft.

The bungalow floor plan Figure "A" shows Doors and Casings as below:

9 Ordinary Doors and Casings, 58 sq. ft. each= ..... 522 sq. ft.
2 Cased Openings, 26 sq. ft. each= ..... 52 " "
2 Extra large Doors, 4 ft. by 6½ ft.=54 sq. ft. each= ..... 108 " "
2 Extra large Doors, 5 ft. by 6½ ft.=65 sq. ft. each= ..... 130 " "
2 Extra large Doors, 7 ft. by 6½ ft.=122 sq. ft. each= ..... 244 " "

All Doors and Casings, 2 sides= ..... 1,056 sq. ft.

The Window Casings and Sash.

Where there are many windows of approximately the same size within a few inches, figure all at the same measurement, four or five inches larger or smaller can make but little difference in either material or labor cost. The inside of the window only is figured with the interior decorating, the outside is included with the painting. The Casing, Frame, Sash and Stop are usually considered as 1½ ft. wide or across. They actually measure a few inches less, but the difficulty of getting at them and cutting edges on the sash justifies the calculation. See Figure "L."

Floor Plan Figure "A" shows Windows, Sash and Casings as below:

Six Windows 3 ft. wide by 4½ ft. high, and the Casing, Frame and Sash would figure 1½ ft. wide. The calculation would be made this way:

Two Side Casings 4½ ft. high=	9 ft.
Top 3 ft. plus a 6 in. casing on each side=	4 "
Bottom Sill 3 ft. plus a 6 in. casing on each side=	4 "
	17 ft.

Each Window Casing would figure then:

1½ ft. by 17 ft.=25½ sq. ft.

All Windows on Plan.

6	Windows,	Sash	3	ft.	x	4½	ft.	at	25½	sq.	ft.	each=153	sq. ft.
6	"	"	1½	"	x	4½	"	"	18	"	"	" =108	" "
3	"	"	3	"	x	3	"	"	21	"	"	" = 63	" "
1	"	"	1	"	x	2	"					= 12	" "
All Windows and Casings, 1 side													336 sq. ft.

Baseboard.

This piece of trim usually measures 6, 7, 10 or 12 in. wide, but is always figured as 1 ft. because both top and bottom edges must be cut clean, which requires at least as much time if not quite as much material as a flat 1-foot surface with no edges to cut.

Figure "A" shows the baseboard measures as below, excluding openings:

Dining Room, 12+15+12+15 ft.=	54 ft.	—24 ft.	openings	=30 ft.
Living Room, 12+20½+12+20½ ft.=	65 "	—33 "	"	=32 "
Den, 11½+13½+11½+13½ ft.=	50 "	—27 "	"	=23 "
Kitchen, 12+7+7+9+5+3½ ft.=	43 "	— 0 "	"	=43 "
Hall & Closet, 14½+3½+14½+3½ ft.=	36 "	—14 "	"	=22 "
Bath, 5½+7½+5½+7½ ft.=	26 "	— 3 "	"	=23 "
Dressing Room, 5+7½+5+7½ ft.=	25 "	— 7 "	"	=18 "
Closet, 2½+7½+2½+7½ ft.=	20 "	— 3 "	"	=17 "
Closet, 3+8½+3+8½ ft.=	23 "	— 3 "	"	=20 "
				228 ft.

Total Baseboard 228 ft. long by 1 ft. wide=228 sq. ft.

Picture Moulding.

Dining Room 12+15+12+15 ft.=	54	ft.
Living Room 12+20½+12+20½ ft.=	65	"
Den 11½+13½+11½+13½ ft.=	50	"
Kitchen 9½+12+13+3½+8½ ft.=	46	"
Hall 11½+3½+11½+8½ ft.=	80	"
	245	ft.

Picture Mouldings are made in different widths, 1¾ in. wide and 3½ in. wide being most common. They are always measured as being ½ ft. wide for convenience in estimating.

Total Moulding is 245 ft. long by ½ ft. wide=122 sq. ft.

Chair Rail.

Hall, 11½+3½+11½+3½ ft.=	30 ft.	— 14 ft.	openings	=16 ft.
Kitchen, 9½+12+13+3½+8½ ft.=	46 "	— 7 "	"	=39 "
Bath Room, 5½+7½+5½+7½ ft.=	26 "	— 7 "	"	=19 "
Closet, 2½+7½+2½+7½ ft.=	20 "	— 3 "	"	=17 "
Closet, 3+8½+3+8½ ft.=	23 "	— 3 "	"	=20 "
				111 ft.

111 ft. long by ½ ft. wide=55 sq. ft.

Plate Rail—Dining Room.

12+15+12+15 ft.—54 ft. minus openings 18 ft. =36 ft.

Figure it as being 1 ft. wide by 36 ft. long—36 sq. ft.

1 Batten or Panel every foot, excluding openings=12+15+12+15 ft.=54 ft., minus 24 ft.=30 ft.

30 Battens 3¼ ft. long—97½ ft. long by 3 in. wide, call it ½ ft. wide=48 sq. ft.

Plate Rail	36	sq. ft.
Battens	48	" "
Total	84	" "

Buffet—Dining Room—Figure "H."

Front measures 7 ft. 4 in. wide by 5 ft. high, call it 7x5 ft.—	35	sq. ft.
2 Sides 1½ ft. by 3 ft.—	9	" "
Top 7½ ft. long by 1½ ft. wide—	11	" "
Shelf 7½ ft. long by ½ ft. wide—	3	" "
Total	58	sq. ft.

Desk and Book Cases—Den.

Front measures 5½ ft. wide by 7 ft. high —	38	sq. ft.
2 Ends measure 1½ ft. wide by 7 ft. high each—	20	" "
7 Shelves measure 1 ft. wide by 5½ ft. each—	38	" "
Pigeon Holes—estimate about	4	" "
Total	100	sq. ft.

Cupboards—Kitchen.

Front measures 6½ ft. wide by 8½ ft. high—	55	sq. ft.
2 Ends measure 1½ ft. wide by 8½ ft. high—	25	" "
7 Shelves measure 1 ft. wide by 6 ft. high—	42	" "
Total	122	sq. ft.

Medicine Case.

Front measures 2 ft. wide by 2½ ft. high —	5	sq. ft.
Inside measures 2 ft. wide by 2 ft. high—	4	" "
8 Shelves 1 ft. wide by 2 ft. long—	16	" "
Total	25	sq. ft.

Linen Case.

Front measures 2½ ft. wide by 3 ft. high =	7½ sq. ft.
2 Sides measure 1½ ft. wide by 3 ft. high =	4½ " "
Top measures 1½ ft. wide by 2½ ft. high =	4 " "
Total	16 sq. ft.

SUMMARY AREA TO BE DECORATED—INTERIOR BUNGALOW—FIGURE "A," "B," "C."

Section No. 31.

Walls, Ceilings and Floors.

	Walls and Ceilings	Floors
Dining Room	403 sq. ft.	180 sq. ft.
Living Room	512 " "	246 " "
Den	349 " "	155 " "
Kitchen	404 " "	156 " "
Closet	163 " "	
Bath	212 " "	41 " "
Hall and Closet	275 " "	50 " "
Dressing Room and Closet	249 " "	56 " "
Screen Porch	311 " "	90 " "
Total	2,878 sq. ft.	974 sq. ft.

Interior Trim.

Baseboard	228 sq. ft.
Picture Moulding	122 " "
Chair Rail	55 " "
Doors, Frames and Casings (2 sides)	1,056 " "
Window Casings, Frames and Sash (1 side)	336 " "
Plate Rail and Battens	84 " "
Buffet	58 " "
Desk and Book Cases	100 " "
Cupboard	122 " "
Medicine Case	25 " "
Linen Case	16 " "
Total Interior Trim	2,202 sq. ft.

TO FIGURE THE AMOUNT OF MATERIAL FOR A JOB.

Section No. 32.

How Many Gallons from a Mix?

See Section No. 11.

How Much Surface Will One Gallon Cover?

Section No. 33.

Because flat paint made by thinning down pure white lead with turpentine and a little oil stays put and does not run, it is possible to mix it so thick as to cover and hide about any surface in one coat. This fact makes it difficult to state how much surface you may expect a gallon to cover. A man will mix his paint sufficiently thick to hide the surface in one coat if he must; then a gallon of paint, for instance, will not cover as much as when it is mixed thin and to hide the surface in three coats.

A gallon of flat paint (lead thinned with turpentine) light tints, will cover on an average each coat as below. These figures do not represent the priming, the second or third coats alone, but rather an average between all three coats. See Section No. 12.

1 Gallon of Flat Paint Covers:

Section No. 34.

Light tints on interior wood trim, plaster, or wall board about .....600 to 700 sq. ft., 1 coat
Dark colors about.....700 to 900 " " " "

See also Section No. 12 for rough cast walls.

1 Gallon of Varnish Covers:
Section No. 35.

Floor Varnish about 500 sq. ft., 1 coat.
Spar Finishing Varnish about 600 sq. ft., 1 coat.

1 Gallon of Hard Oil Covers:
Section No. 36.

About 450 to 500 sq. ft., 1 coat.

1 Gallon of Shellac Covers:
Section No. 37.

On an average about 400 sq. ft., 1 coat.

1 Gallon of Wax Covers:
Section No. 38.

About 600 sq. ft., 1 coat.
Formulae: 1 gallon turpentine, 2 lbs. beeswax, 2 tablespoonfuls of XXXX ammonia.

1 Gallon Varnish Size Covers:
Section No. 39.

About 1,200 to 1,400 sq. ft., 1 coat.
Composed of varnish, benzine or turps, and a little paint.
1 qt. covers about 350 sq. ft., 1 coat.

1 Gallon Glue Size Covers:
Section No. 40.

About 1,000 sq. ft., 1 coat.
1 qt. covers about 250 sq. ft., 1 coat.
Formulae: 2½ to 3 gallons water to 1 lb. good glue, ground or flake (about 22c quality).

1 Gallon of Oil Stain Covers:
Section No. 41.

Mahogany, Oak and others about 500 sq. ft., 1 coat.

1 Gallon of Spirit or Acid Stain Covers:
Section No. 42.

Mahogany, Oak and others about 450 sq. ft., 1 coat.

1 Pound Paste Wood Filler Covers:
Section No. 43.

On Oak about 40 sq. ft., 1 coat.
On Birch about 45 sq. ft., 1 coat.
On Pine about 45 sq. ft., 1 coat.

1 Gallon Liquid Filler Covers:
Section No. 44.

About 550 sq. ft., 1 coat.

1 Gallon White Enamel Covers:
Section No. 45.

There is a little difference between the brands of different manufacturers, but on an average one gallon will cover 600 sq. ft., one coat, over prepared ground coats on any surface.

1 Gallon of Enamel Undercoating Covers:
Section No. 46.

About 500 sq. ft., 1 coat.

1 Gallon of Paint and Varnish Remover Covers:
Section No. 47.

Brands differ, but 300 sq. ft., one coat, is an average.

1 Gallon of Calcimine Covers:
Section No. 48.

On Smooth Plaster about 275 sq. ft., 1 coat.
On Sand Finish Plaster about 225 sq. ft., 1 coat.
On Brick about 175 sq. ft., 1 coat.

1 Gallon of Bronze Covers:
Section No. 49.

Bronze Powder thinned with bronzing liquid or varnish and turpentine about 700 sq. ft., 1 coat on metal.

One ounce of bronze powder thinned as above covers about 24 sq. ft., 1 coat on metal.

Tiffany Glazing Color Covers:
Section No. 50.

Figure one pound of each color per room of average size.

Starch.
Section No. 51.

Figure one pound of starch per room.

TO FIGURE THE AMOUNT OF LABOR FOR A JOB.

Section No. 52.

What is a Day's Work?
See Section No. 14, Chapter III.

The figures to follow do not represent the amount of first, second or third coat work a man can do per hour, but rather an average between all three coats. They were arrived at by adding together the time required for all three coats and dividing that figure by three.

Painting Wood Trim.
Section No. 53.

Figure that an average journeyman will paint 150 sq. ft. per hour, or 1,350 sq. ft. per day of nine hours.

Painting Smooth Plaster Walls.
Section No. 54.

An average journeyman will paint about 150 sq. ft. per hour, 1 coat—about 1,350 sq. ft. per day of nine hours.

Painting Sand Finish Walls.
Section No. 55.

One man will paint about 140 sq. ft. per hour, 1 coat, and about 1,260 sq. ft. per day of nine hours.

Painting Rough Stucco Walls.
Section No. 56.

One man will paint about 110 sq. ft., 1 coat, per hour, and about 990 sq. ft., 1 coat, per day of nine hours.

Painting Canvas or Muslin.
Section No. 57.

One man will paint about 140 sq. ft. per hour, 1 coat, and about 1,260 sq. ft., 1 coat, per day of nine hours.

Painting Wall Board.
Section No. 58.

When panelled before painting many edges must be cut. One man will paint about 110 sq. ft. per hour, 1 coat, and 990 sq. ft., 1 coat, per day of nine hours.

To paint when not panelled or before moulding is put on, figure same as smooth plaster walls.

Sizing.
Section No. 59.

One man will apply glue size at the rate of 600 sq. ft. per hour. One man will apply varnish size at the rate of 100 sq. ft. per hour.

Enameling.
Section No. 60.

One man will enamel about 120 sq. ft., 1 coat, per hour on doors, windows, baseboards, etc. An average Door and Casing will be given one coat both sides in half an hour.

Figure that each man will enamel two doors and casings per hour, 1 coat, two sides.

Figure that one man will enamel 130 lineal feet of baseboard per hour, 1 coat. Figure all baseboards the same, whether 6 inches, 8 inches, or 10 inches wide.

Figure that one man will enamel an average window in 15 minutes, or four windows per hour, 1 coat; this includes the casing, sash, sill, and all inside.

Figure that one man will enamel 140 lineal feet of picture moulding, cove mould or chair rail per hour, 1 coat.

Varnishing, Shellacing.
Section No. 61.

An average journeyman will apply one coat in one hour, as below:

On 2 Doors and Casings, both sides.
On 4 Windows and Casings, one side.
On 130 lineal feet of Baseboard.
On 150 lineal feet of Chair Rail.
On 140 lineal feet of Picture Mould.
On 150 lineal feet of Cornice.
On 70 sq. ft. of Flat Surface.

Staining.
Section No. 62.

One man will brush on and wipe off oil stain at the rate of about 200 sq. ft. per hour. Spirit stain and water stain about 150 sq. ft. per hour.

Calcimining.
Section No. 63.

An average journeyman will apply as below:
200 sq. ft., 1 coat, per hour on sand finish wall.
340 sq. ft., 1 coat, per hour on smooth finish wall.
180 sq. ft., 1 coat, per hour on brick.

Bronzing.
Section No. 64.

One man will bronze two radiators per hour, 1 coat.

Starching.
Section No. 65.

One man will coat and stipple with starch about 200 sq. ft. per hour.

Stippling.
Section No. 66.

This requires the services of an extra man, as it must be done immediately after the paint is brushed on. Figure for stippling a room the same time for one man as you figure for painting one coat.

One man can stipple 600 or 700 sq. ft. per hour if the work is ready, but he usually follows a brush hand and can work no faster, so figure 150 sq. ft. per man per hour.

Floor Filling—Preparing.
Section No. 67.

Figure for brushing on the filler that one man will coat 150 sq. ft. per hour, 1 coat.

Figure the same time for wiping off the surplus filler.

Figure for sandpapering that one man will rub down about 300 sq. ft. per hour.

Waxing and Polishing.
Section No. 68.

One man will brush on about 200 sq. ft. per hour, 1 coat.

One man will polish fairly well with a weighted brush about 150 sq. ft. per hour.

Preparing Surfaces.
Section No. 69.

Such work is usually so uncertain as to time and material needed that it is safer to do it on the time and material basis,—that is, day work. You never know what you are up against when burning and scraping off cracked and scaled paint, for instance, or removing old wall paper, filling cracks, etc. The paint may come off fairly easy, or it may be so hard as to make it necessary to dig it off a little at a time. There may be one or two thicknesses of wall paper or six.

Possibly the paper was varnished some time or other which, of course, makes a difficult covering to remove. After you get the old paint or paper off, the plaster may be so poor as to require much filling and a coat or two of shellac before you proceed with the painting.

Washing.
Section No. 70.

To do a good job of washing of walls requires about as much time as to paint it one coat, so figure the same time for it.

Calcimine can be washed off at the rate of 170 sq. ft. per hour.

Tiffany Wall Glazing.
Section No. 71.

1 Glazing Color (excluding ground coats) 50 sq. ft. per hour.

4 Glazing Colors (excluding ground coats) 33 sq. ft. per hour.

This includes the blending and stippling.

Stenciling.
Section No. 72.

An Ordinary Stencil 4 in. wide may be transferred in two colors to the wall, the ties filled in by hand, a small amount of a third color put in by hand and high lights wiped out at the rate of about 10 lineal feet per hour.

An Ordinary Stencil can be transferred in one color, no filling in of ties or wiping out at the rate of 20 lineal feet per hour.

An Outline Stencil may be transferred at the rate of 30 lineal feet per hour.

Filling in Outline Stencils is an uncertain task as to time required. The character of the design, number of colors, amount of wiping out of high lights and the skill of the decorator are all determining factors. The time required per yard or per room is subject to great variation. It is best to charge for this work on the Time and Material Basis; an estimate for it is little better than a guess usually.

Time Required for Mixing Colors.
See Section No. 73.

Allow one hour per room for mixing paint, stains, wax, filler, and other necessary incidentals.

MAKING UP THE ESTIMATE—INTERIOR FOR BUNGALOW SHOWN IN FIGURE NO. "A."

Listing the Materials.
Section No. 75.

Walls and Ceilings.
Section No. 76.

In Section No. 31 we find that the total area of walls and ceilings to be painted is 2,878 sq. ft.

PUTTY. The first step is to prepare these walls and ceilings for painting by filling cracks and leveling up the surface. We will estimate that it will require about 2 lbs. of putty and 1 pint of shellac.

SIZE. The surface is now ready to size. Section No. 39 says 1 gallon of varnish size covers about 1,200 sq. ft. Divide the total surface area, 2,878 sq. ft., by 1,200 sq. ft. and you find that 2.39 gals. of size are needed for the job, call it 2½ gals. To make this size 1¼ gallons of varnish and 1¼ gallons of benzine are needed.

PAINTING. The surface is now ready to paint. Section No. 34 says 1 gallon of flat paint, light tint, will cover about 600 to 700 sq. ft., 1 coat, on smooth plaster walls. Divide the area to paint, 2,878 sq. ft., by 700 sq. ft.=4.11 gals., call it 4½ gals. for one coat, and 9 gals. for two coats.

The materials needed to make this paint are lead, color and turpentine. An average formula for a

light tinted paint thinned to brushing consistency is:

100 lbs. of white lead	equals	.....	2¾ gals.
3 gals. turpentine	"	.....	3 "
1 lb. color	"	.....	0 "
Makes		.....	5¾ gals of paint

The job will need then a little less than twice the quantities of this formula, but it is best to send to each job a little more than is needed, as shown by your estimate. The quantities to figure then are:

100 lbs. of white lead	equals	.....	2¾ gals.
100 " " " "	"	.....	2¾ "
6 gals. turpentine	"	.....	6 "
2 lbs. color	"	.....	0 "
Makes		.....	11½ gals. of paint

STARCHING. Estimate that about 1 pound of starch is needed for each room, or 4 pounds in all.

Floors.

Section No. 77.

Section No. 31 shows the total floor area to be finished as 974 sq. ft.

FILLING. One gallon of liquid filler fills about 550 sq. ft. (See Section No. 44.) Divide 974 sq. ft. by 550 sq. ft. and we find that 1.77 gals. of filler are needed, call it 1¾ gals. If paste filler is to be used on oak floors, 1 pound thinned with turpentine will fill about 40 sq. ft. Divide the floor area, 974 sq. ft., by 40 and you find that 24 pounds of paste are needed; also one-half gallon of turpentine will be required to thin the paste.

SHELLAC. A coat of shellac is now in order. In Section No. 37 we find that 1 gallon covers about 400 sq. ft., 1 coat. Divide the floor area, 974 sq. ft., by 400 sq. ft. and we find that 2.43 gallons of shellac are needed, call it 2½ gallons.

VARNISH. A coat of varnish is next needed. One gallon covers about 500 sq. ft., 1 coat. (See Section No. 35.) Divide the floor area, 974 sq. ft., by 500 sq. ft. and we find that 1.94 gallons of varnish are needed, call it 2 gallons.

WAXING. A coat of wax will finish the floors. A gallon of wax made by this formula will cover about 600 sq. ft., 1 coat (see Section No. 38):

2 lbs. beeswax—melt in a pot placed in a pail of hot water and add 1 gallon of turpentine and 2 tablespoonfuls of strong Hartshorn ammonia.

The area to be waxed is 974 sq. ft. Divide 974 sq. ft. by 600 sq. ft. and we find that 1.62 gallons of wax are needed, call it 2 gallons. The materials needed then are:

2 gallons turpentine,
2 pounds beeswax,
1 ounce ammonia.

The Wood Trim.
Section No. 78.

In Section No. 31 we find the total area of trim to be finished is 2,202 sq. ft. Often one or two of the rooms in the house are given a different finish on the trim than the balance of the rooms; the bath and dining-rooms may be white, the kitchen natural finish and other rooms stained. It will serve to illustrate the method of estimating just as well, however, simply to figure all of the trim to be finished the same way—that is, fill, stain and wax.

Filling.

One gallon of liquid filler fills about 550 sq. ft. as per Section No. 44. Divide the total trim area, 2202 sq. ft., by 550 and you find that 4 gallons of filler are needed for the job.

Staining.

One gallon of oil stain will cover about 500 sq. ft., one coat on an average. One gallon of spirit or acid stain will cover about 450 sq. ft. Divide the area to be stained, 2202 sq. ft., by 500 sq. ft., and we find that 4.44 gals. of oil stain are needed for the job, call it 4½ gals. See Sections No. 41 and 42.

Waxing.

One gallon of wax will cover about 600 sq. ft. one coat. See Section No. 38. Divide the surface to be waxed, 2202 sq. ft., by 600 sq. ft., and we find that 3.67 gallons of wax are needed for the job, call it 4 gals. Section No. 38 shows the materials needed for a gallon of wax are:

1 gal. turpentine
2 lbs. beeswax
2 tablespoonfuls of hartshorn ammonia.

For 4 gals. of wax then the materials needed are:

4 gals. turpentine
8 lbs. beeswax
8 tablespoonfuls of ammonia.

LISTING THE LABOR
Section No. 79.

Walls and Ceilings.
Section No. 80.
PUTTY CRACKS.

Time required to prepare the walls of different rooms in houses will vary greatly according to the

condition of the walls. When walls are cracked more than usual do not include the preparation of surfaces in the contract estimate but charge for it on the time and material basis. We will estimate that an hour's time will be needed for filling the cracks in each of the four rooms, 4 hours in all.

SIZING.

There are 2878 sq. ft. of walls and ceilings to be sized. One man will coat with varnish size about 100 sq. ft. per hour. Divide 2,878 sq. ft. by 100 sq. ft. and we find that 28.78 hrs. are required for the whole job, call it 29 hours for one man. See Section No. 59.

PAINTING.

The area to paint is 2878 sq. ft. One man will paint on an average about 150 sq. ft. per hour, one coat. Divide 2878 by 150 and we find that 19.18 hrs. are needed for one man to paint the entire area, call it 19 hours even for one coat and 38 hours for two coats. See Section Nos. 54, 55, 56 and 57.

STIPPLING.

The last coat usually is stippled. The area to stipple is 2878 sq. ft. One man will stipple as fast as the paint is brushed on, so figure 150 sq. ft. per hour. The stippling will then also require 19 hours. See Section No. 66.

STARCHING.

Wall and ceiling area to be starched is 2878 sq. ft. One man will starch and stipple at the same time about 200 sq. ft. per hour. Divide 2878 by 200 and we find that 14.39 hours' time are necessary for starching, call it 14½ hours. See Section 65.

Floors.
Section No. 81.

FILLING.

Area to be filled is 974 sq. ft. One man will brush on about 150 sq. ft. per hour and will wipe off about the same amount in the same time as given by Section No. 67. Divide 974 by 150 and we find that 6.49 hours are needed, call it 6½ hours. We have then 6½ hours for spreading the filler and 6½ hours for wiping; 13 hours for both.

SANDPAPERING.

A man will sandpaper lightly about 300 sq. ft. per hour on an average. See Section No. 67. Divide 974 sq. ft. by 300 and we find that 3.24 hours are needed, call it 3½ hours.

SHELLACING.

974 sq. ft. are to be coated. One man will coat about 70 sq. ft., one coat per hour. See Section No. 61. Divide 974 by 70 and we find that 13.91 hours, call it 14 hours, are needed.

VARNISHING.

Same time as is needed for shellacing, 14 hours for one man.

WAXING.

974 sq. ft. is the area to be waxed. One man will coat with wax about 200 sq. ft. per hour. See Section No. 68. Divide 974 by 200 and we find that 4.87 hours are needed, call it 5 hours.

POLISHING.

Much or little time may be spent on this finishing according to how fine a job is expected. In Section No. 68 we find that one man will polish fairly well with a weighted brush about 150 sq. ft. per hour. Divide 974 by 150 and we find that 6.49 hours are needed, call it 6½ hours.

The Wood Trim.
Section No. 82.

The total area of all trim in this bungalow is given in Section No. 31 as 2202 sq. ft.

STAINING.

Area to be stained, all the wood trim, is 2202 sq. ft. One man will coat and wipe off with oil stain as per Section No. 62, about 200 sq. ft. per hour. Divide 2202 by 200 and we find that 11 hours are required.

FILLING.

One man according to Section No. 67 will spread on about 150 sq. ft. of filler per hour; he will wipe off about the same amount on an average. Divide 2202 by 150 and you find it will require about 14.68 hours, call it 14½ hours, to spread the filler and the same time to wipe it off, or 29 hours for both.

SANDPAPERING.

A man will sandpaper lightly about 300 sq. ft. per hour as per Section No. 67. Dividing 2202 by 300 we find that 7.34 hours, call it 7½ hours, are needed.

WAXING.

2202 sq. ft. is the total trim area to be waxed as per Section No. 31. Section No. 68 says one man will coat with wax about 200 sq. ft. per hour. Divide 2202 by 200 and we find that 11 hours are needed.

Mixing.
Section No. 83.

Considerable time is always required for mixing paint, stains, fillers, wax and other incidentals that are not figured in with above brushing time. There are four rooms and bath in the bungalow being figured so add 5 hours time.

THE ESTIMATE COMPLETE.
INTERIOR OF BUNGALOW FIGURE "A."
Section No. 84.

Material prices and the wage scale of 50c per hour used here will necessarily change to fit market conditions in each locality but the method of figuring should remain the same anywhere.

Material Cost.
See Sections Nos. 74 to 78.

WALLS AND CEILINGS.				
Putty, 2 lbs	at	.03½	.07	
Varnish Size—1¼ gals. benzine	"	.08	.10	
1¼ gals. varnish	"	2.00	2.50	
Flat Lead Paint—				
200 lbs. white lead	"	.08	16.00	
6 gals turpentine	"	.70	4.20	
2 lbs. color	"	.25	.50	
Starch, 4 lbs	"	.05	.20	$23.57
FLOORS.				
Paste Filler—24 lbs	"	.12	2.88	
½ gal. turpentine	"	.70	.35	
Shellac, white, 2½ gals	"	1.50	3.75	
Varnish, floor, 2 gals	"	2.50	5.00	
Wax—Beeswax, 2 lbs	"	.35	.70	
Turpentine, 2 gals	"	.70	1.40	
Ammonia, 1 oz	"		.10	$14.18
THE WOOD TRIM.				
Filler, liquid, 4 gals	"	.90	3.60	
Stain, 4½ gals	"	1.20	5.40	
Wax—Beeswax, 8 lbs	"	.35	2.80	
Turpentine, 4 gals	"	.70	2.80	
Ammonia, 8 oz	"		.50	$15.10
Total Material Cost				$52.85

Labor Cost.

See Sections Nos. 79 to 83.

WALLS AND CEILINGS.

Puttying Cracks	4	hrs.	
Sizing	29	"	
Painting	38	"	
Stippling	19	"	
Starching	14½	"	104½ hrs.

FLOORS.

Filling and Wiping	13	"	
Sandpapering	8½	"	
Shellacing	14	"	
Varnishing	14	"	
Waxing	5	"	
Polishing	6½	"	56 hrs.

INTERIOR TRIM.

Staining and Wiping	11	"	
Filling and Wiping	29	"	
Sandpapering	7½	"	
Waxing	11	"	58½ hrs.

Mixing paint, size, stain, etc. ..... 5 hrs.

Total Time ..... 224 hrs.

Total Labor Cost, 224 hrs. at 50 per hr.... $112.85

Overhead Expense.

Add Labor Cost ($52.85) and Material Cost ($112.00) together and take 15% of it, equals ..... $ 24.72

Profit.

Add as profit whatever amount you think you ought to have, 10, 20 or 50% of the Labor Cost and Material Cost. In this estimate we will take 50% for profit. Add Labor Cost ($52.85) and Material Cost ($112.00) together; the sum equals $164.85. Take 50% of this, equals $84.42

PRICE TO CHARGE CUSTOMER $273.99

CHAPTER V.
PROFITABLE PRICES—PRICE LISTS.

What is a Job Worth?
Section No. 85.

Who is responsible if you are making less profit out of the painting business than you ought to make? If you complain that it is impossible to get good prices for work; that people will not pay what painting is worth, and that you are compelled to cut your prices below a living profit basis in order to get any work to do you are mistaken. You believe that you are stating facts; you are perfectly honest in thinking you are compelled to cut prices way below what you know you ought to ask. You are fully persuaded that people want cheap work and low prices and, in consequence of these beliefs, you constantly endeavor to reduce the prices on work you figure to the lowest possible minimum, even though you cannot then do the work honestly and make a profit. There is only one way to get prices and that is to ask them. We are often fighting competition that does not exist, and trying to meet quotations that have not been given by competitors.

Some people think it is shrewd buying to try to give the impression that they can get their work done for a lower price by a competitor whom you know to be a quality man and a careful estimator and then to say they would like to give you the job, but do not feel justified in doing so unless you can

meet the other man's figures. Don't be mislead by any such game. If you have estimated the work carefully and are satisfied that your price is right, that you must sacrifice your profit if you take the work at a lower price, stick to your figure even though you lose the job. It is better to let somebody else get the work than to take it at a figure which will not yield you a fair profit. There are worries enough and chances for something to go wrong on every job. You may be compelled to do parts of it over again in order to give your customer the kind of a job you must in order to satisfy him and to maintain your reputation. You can't afford to add the additional worry of trying to make the job yield a profit when you know the original price was too low. And you cannot afford to take work that does not yield a profit; might better go fishing. A contractor whose business is down to the dead level of price competition will never get it back to a profitable basis unless he regains his nerve and asks the prices he ought to get.

First-class work at a profit is the standard to establish and then live up to it. People are not going to tell you that your prices are too low; they are not going to insist that you shall make a living profit if you seem determined to do without it. But they will not respect you any more because you ask cheap prices, and they will not believe they are getting as good workmanship or material as they would expect if they paid you a fair price. **Every job is worth all it costs and a profit.** All it costs—don't forget that. Not only labor and materials, but all

the overhead charges,—the percentage added to take care of the running expenses of the business,—go to make up the cost of the job. You are not doing justice to yourself until you get all the job costs and a reasonable profit in addition.

There are those who are so anxious to get their work done cheap that they have no thought of quality. To get their work you have to cut prices below the figures that will enable you to give an honest job. Then you get the reputation of being a cheap man. Competitors, finding you are determined to cut the profit out of bids in order to get the work away from them, will retaliate in the same way, and before long every painter in the town will be doing work so cheap that there is no profit in it. Nobody will be making a fair living out of the painting business; no one will have the respect of the business men of the town and the painters will lose credit with supply houses. The end of such cut-throat competition is usually bankruptcy. It does not pay.

A large proportion of the community is willing to pay fair prices for anything, whether it is a new coat to wear or a new coat of paint for the house. You must make people feel satisfied that they are getting good value for the money they spend. They want quality first and you cannot satisfy them by giving cheap price and low value. If you can convince these people that you will give them good materials and good workmanship, you can get a good price—all that the work costs and a profit. You must have the courage to ask a profit bringing price.

Get the reputation for doing good work, for al-

ways carrying out your contracts to the letter and a little more. When people question the price you ask or when they draw comparisons between your figures and those some cheaper competitor offers, take the stand that you have a reputation for the quality of your work and that you cannot afford to do anything but the best. Tell them the prices you ask are the lowest that can be given if they want reliable work. Point out, if necessary houses that have been painted with cheap materials and in a slip-shod way and show how soon they go to pieces and then call attention to jobs you have done that have stood up well and looked well long after the cheap work has gone to pieces. Arguments like this are convincing, if you advance them earnestly and show that you mean to give full value in return for the price you ask.

What Price Shall I Charge?
Section No. 86.

A careful study of the estimating method given in this volume will enable you to figure in a sufficiently accurate manner the cost of a job. That much accomplished, make up a list of materials you use generally with prices in large and small lots in pound, pint, quart, half-gallon, five gallon and barrel lots. Keep this schedule of prices correct by revising the figures as changes occur.

With the correct amount of material needed and the right prices before you all the time you have the basis upon which to figure the cost of a job. After this have the courage to add to this cost 15% (or some figure) to cover your overhead expense, and

20% (or some figure) for profit. You then have a fair price in the total of these items to submit to the property owner. **Material Cost, Labor Cost, Overhead Expense and Profit**—these are the necessary elements into which to divide the cost of any work.

Every job is Worth all it Costs—and a Profit.

The Price per Square Yard.

Section No. 87.

Contractors of long experience often arrive finally at a price to charge per square yard or per square (10x10 ft.), which includes all in one figure the Material Cost, Labor Cost, Overhead Expense and Profit. Just what this price should be depends, of course, on market conditions under which your business is conducted. Each contractor must figure out the price or rate that is correct for his own business. This price to charge per square yard or per square (10x10 ft.) must necessarily be greater in cities where the wage scale is 65c per hour than where a 50c scale is in force. It will even be greater or less as between different contractors in the same town because, while the Material and Labor Costs are about the same to each, their Overhead Expenses are quite different. One may pay a high rent and another little or no rent; one may employ a clerk and use an auto truck, while his competitors tote their equipment about with a "One-hoss shay," or a push-cart. The contractor who uses the auto truck usually carries on a much larger business than others and so his cartage and other Overhead Expenses often are not proportionately much greater for each job.

How to arrive at or figure out this price per square yard is the next point of interest. For prices charged by other contractors, see Section No. 88, to follow.

Taking the two estimates for exterior painting given in Chapter III, Sections Nos. 21 and 23, as a basis from which to work, the price per square yard for each of them would be figured as below.

Measurements of the houses are 4,577 sq. ft. for one and 3,573 sq. ft. for the other. Reduce the measure to square yard basis by dividing each figure by 9 (9 sq. ft. equals 1 sq. yd.) and you find that one house measures 508 sq. yds. and the other 397 sq. yds.

The estimate given in Chapter III for the house having 508 sq. yds. of surface to paint shows that the price for the job to be submitted to the owner is $95.40. The price for the other house having 397 sq. yds. is given as $72.49.

Find the price per square yard by dividing the price in dollars by the number of square yards:
$95.40 divided by 508=16.81+call it 17c per sq. yd.
$72.49 " " 397=18.25+ " " 18c " " "

It would not be well to use either 17c or 18c per square yard as a Price to charge for all work, because both of the houses from which these Prices were taken are rather plain and not very large. The Price you decide to charge for all work should be an average figure based on different kinds of work—both large and small, fancy trimmed and plain houses.

Let us assume we have a record of painting jobs that figure for a large house with fancy cornice, gable, grills, shingle belt, etc., a price of 26c per sq. yd.; a large house, plain trim, with a price of 22c per sq. yd.; a brick building with a price of 24c per sq. yd. and a cottage with fancy trim with a price of 20c per sq. yd. in addition to the two prices of 17c and 18c per sq. yd. as per the Estimates referred to.

To arrive at a fair average Price to charge per square yard, add all the above prices together:

17c per square yard,
18c " " "
26c " " "
22c " " "
24c " " "
20c " " "

127

Now divide 127 by 6, which is the number of Prices averaged; 127 divided by 6 equals 21c per sq. yd. as the Price to charge for two-coat work.

THE PRICES OTHERS CHARGE.
Section No. 88.

Time and Material Basis.
Section No. 89.

Chicago contractors add 15c to the present wage scale of 70c per hour for the time charge on a job, making 85c per hour per man.

Material is charged against the job at retail prices and nets some profit to the contractor.

Exterior Painting Prices.
Section No. 90.

One Contractor Uses the Below Price Schedule: Use the tape line and measure carefully the cornices, mouldings, etc., following hollows, rounds and edges. Add 20 per cent for ordinary weatherboarding and edges of door and window frames. Also make allowance for parts difficult to reach. Prices should be figured as follows:

New work,	1 coat,	per	square	yard,	10	to	12c
" "	2 coats,	"	"	"	20	to	22c
" "	3 "	"	"	"	25	to	28c
Old Work,	1 coat,	"	"	"	15	to	18c
" "	2 coats,	"	"	"	22	to	25c

Brick Walls, new, three coats, per square yard, 28c to 35c.

Brick Walls, old, two coats, per square yard, 20c to 30c.

Brick penciling, per square yard, 12c to 15c.

Where scaffolding is necessary, or the work is otherwise difficult of reach, or where color of higher cost than the ordinary is in demand, you must exercise your own judgment in figuring the extra time and expense. Also in the case of repainting, be very careful to test the old paint, no matter how well and solid it may look, because it very often happens that the old paint is loose from lack of binder in the original priming, and the new paint, on drying in contracting, loosens the old coating, causing scaling and then the new paint is blamed for the trouble. When the old paint has cracked, scaled or blistered, take this into consideration and figure on its removal. Also examine window sash to see how the putty is, and blind slats to see whether they are stuck fast and difficult to paint.

Another contractor gives his Price Schedule as follows:

EXTERIOR OF FRAME BUILDINGS.

One coat, 9c yard.
Two coats, 15c yard.
Three coats, 20c yard.

EXTERIOR OF BRICK BUILDINGS.

One coat, 12c yard.
Two coats, 17c yard.
Three coats, 22c yard.

Blinds, per pair, 50c to 75c, two coats; Iron Shutters, per pair, 75c, two coats.

OPENINGS.

Painting exterior window openings, casing, sash, etc., 1 coat, 60c; 2 coats, 85c each.

Painting exterior of door openings, 1 coat, $1.00 each; 2 coats, $1.50 each.

TIN ROOF.

Old work, 1 coat, 10c.
Old work, 2 coats, 15c.
New work, 1 coat, 12c.

IRON WORK.

Grilles and ornamental work to be doubled or tripled (surface measurements):

One coat, 12c.
Two coats, 18c.
Three coats, 22c.
Steam radiators, 1 coat, 75c each.
Steam radiators, 2 coats, $1.25 each.
Bronzing highlights, 50c each.
Bronzing entire radiator, $1.00 each.
Verde antique work, 35c yard.

STORE FRONTS.

One coat, 20c yard.
Two coats, 30c yard.
Upper stories, 1 coat, 25c yard.
Upper stories, 2 coats, 35c yard.

(Measurements usually doubled instead of increasing prices.)

BOARD FENCES.

One coat, 10c yard.

Two coats, 15c yard.

Measurements doubled for picket fences. Dormer windows, $1.00 to $2.00 each.

Nineteen contractors at Loveland, Colo., agreed to maintain during 1915 the price schedule below and furnish stock, except where noted to the contrary:

DAY WORK.

Wages at 50c per hour.

ALL PREPARATORY WORK.

Wages, 62½c per hour.

ROOF WORK.

Per square (10x10 ft.), $1.50 and $2.50.

EXTERIOR PAINTING.

To furnish stock, 1 coat, 12c per sq. yd.; 2 coats, 22c; 3 coats, 30c.

Owner to furnish stock, 1 coat, 7c per sq. yd; 2 coats, 13c; 3 coats, 18c.

A master painter of many years' experience gives these as average prices for use outside of large cities, all stock furnished by contractor:

PAINTING NEW EXTERIOR WOOD BUILDING:

Priming coat and putty, 14c per sq. yd.
Two coats and putty, 22c " " "
Three coats and putty, 32c " " "

PAINTING OLD EXTERIOR WOOD BUILDING.

One coat, 16c per sq. yd.
Two coats, 22c " " "

PAINTING BLINDS.

One coat, 44c per pair
Two coats, 60c " "
Three coats, 90c " "

PAINTING TIN ROOFS.

One coat, 10c per sq. yd.
Two coats, 18c " " "
Three coats, 24c " " "

PAINTING METAL GUTTERS, VALLEYS.
One coat, 3c per running foot
Two coats, 4c " " "
Three coats, 6c " " "
PAINTING SHINGLE ROOF.
One coat, 14c per sq. yd.
Two coats, 26c " " "
Three coats, 40c " " "
STAINING SHINGLES.
1 coat, dipped, $5.00 per 1,000 shingles.
1 coat, brushed on roof, $5.00 per 1,000 shingles.
WINDOW SASH.
Small sash, one coat, 25c each
" " two coats, 30c "
" " three coats, 45c "
Large sash, one coat, 35c "
" " two coats, 40c "
" " three coats, 55c "
PAINTING NEW BRICK WALLS.
One coat, 18c per sq. yd.
Two coats, 24c " " "
Three coats, 38c " " "
PAINTING OLD BRICK WALLS.
One coat, 14c per sq. yd.
Two coats, 28c " " "
Three coats, 50c " " "

Interior Decorating Prices.
Section No. 91.

Nineteen contractors at Loveland, Colo., agreed to maintain during 1915 the below price schedule and to furnish stock:

DAY WORK.
Wages, 50c per hour.
ALL PREPARATORY WORK.
Wages, 62½c per hour.
PAINTING WOOD TRIM—GLOSS.
One coat, 15c per sq. yd.
Two coats, 25c " " "

PAINTING WOOD TRIM—FLAT.

One coat,	17c	per sq. yd.
Two coats,	28c	" " "
Three coats,	35c	" " "

GRAINING (Excluding Ground and Varnish), 45c per square yard.

PAINTING WALLS—OIL PAINT.

One coat,	12c	per sq. yd.
Two coats,	22c	" " "
Three coats,	30c	" " "

TINTING WALLS—WATER COLOR.

Smooth walls,	$1.00	per 100 sq. ft.
Sand finish, rough,	1.25	" " " "

STENCIL WORK.

65c per hour.

ENAMELING.

One coat,	25c	per sq. yd.
Four coats, rubbed,	66c	" " "
Two coats,	50c	" " "

VARNISHING.

Two coats,	35c	per sq. yd.
Three coats,	48c	" " "
Four coats,	60c	" " "

STAINING.

15c per square yard.

PAPERHANGING.

Common lap work,	35c	per roll
Nip work,	50c	per double roll
Tiling and dull washable paper,	50c	" " "
Leatherette, pressed goods, White,	$1.25	" " "
Leatherette, pressed goods, Colors,	1.00	" " "
Metallics, grass cloth, silk,	75c	" " "
Wire edge, 30 in. goods,	75c	" bolt
Brush tints,	2.00	" "
Upper and lower, advance,	10c	" roll
Sanitas,	25c	per yard

Burlap, 20c " "
Smooth crowns, 5c each
Pressed " 7½c "
Cut out borders less than 9 in. 5c to 7c per yd.
" " " over 9 in., 7c to 15c " "
Base borders and liners, 2c " "

An experienced contractor has this to say about prices:

On interior work, measure the size of the rooms, if walls and ceilings are to be painted, but do not make any deductions for windows and doors. Figure on square yards of surface and set your price accordingly. If the rooms are papered, and only the woodwork is to be painted, measure the baseboards, window frames, doors and door frames, and figure the sash as if solid. For interior work on walls and ceiling, new work, three coats, the price should not be less than 30c per square yard; for old work, two coats, 24c. If only the woodwork is to be painted, new work, three coats, 35c to 40c per yard; while on old work, two coats, 28c to 32c will be none too much, according to condition of surface.

Another contractor made up this price list:

PAINTING WALLS AND CEILINGS.

One coat, 9c per sq. yd.
Two coats, 15c " " "
Three coats, 22c " " "

One coat size and 2 coats paint, 20c per sq. yd.

Three coats paint and stippled, 25c to 30c per sq. yd.

PAINTING NEW PLASTER.

One coat size and 3 coats paint, 35c per sq. yd.

WASHING CEILING AND 1 COAT PAINT,

16c per square yard.

TIFFANY WALL GLAZING,

40c per square yard.

PAINTING METAL CEILINGS.

One coat, 14c per sq. yd.
Two coats, 18c " " "

PAINTING WOOD TRIM.

One coat, 10c per sq. yd.
Two coats, 15c " " "

WOOD TRIM.

Varnishing, one coat, 10c per square yard
" two coats, 15c " " "
Stain and varnish flat, one coat, 15c " " "
Wash and varnish, 2 coats, 18c " " "
Paint, grain and varnish railings, 40c per running yd.

Paint, grain and varnish beams and overhead rafters, per yard, 30c.

Stairways, ordinary, stained and waxed, $5.00 to $12.00 each.

Same, stained and two coats varnish, $8.00 to $18.00 each.

ENAMELING.

One coat, 15c yard
Two coats, 22c "
Three coats, 30c "
Four coats, 40c "

Rubbing enamel, per yard, 20c.

FLOORS.

Oiling, one coat, 8c
" two coats, 14c

Filling, and two coats varnish, 18c yard.

Fill, shellac, and one coat varnish, rubbed, 30c yard.

Stain, and two coats varnish, 20c yard.

One coat oil and one coat varnish, 15c yard.

Old floors, one coat varnish, 15c yard.

DOOR AND CASINGS (Two Sides).

Varnishing, one coat, 70c to $1.00 each
" two coats, $1.00 to 1.50 "
Shellacing, one coat, 1.15 "
Stain, two coats, varnish and wax, 1.50 "

Fill, stain and two coats varnish,	2.00	"
" " " " " " rub,	2.50	"
" " " three " " "	3.00	"
Enamel, four coats and rub,	4.00	"

Still another contractor uses this price schedule:

PAINTING DOORS (Two Sides).

One coat,	86c	each
Two coats,	$1.40	"
Three coats,	1.80	"
Filling, two coats varnish and rubbed with pumice stone and water,	2.10	"
Filling, and one coat varnish,	1.10	"
" " two coats "	2.20	"

PAINTING WINDOW CASINGS (Small and Sash).

One coat,	45c	each
Two coats,	75c	"

PAINTING WINDOW CASINGS (Large and Sash).

One coat,	60c	each
Two coats,	85c	"

WINDOW CASINGS AND SASH.

Fill, and two coats varnish,	$1.00	each

SANDPAPERING AND PUTTYING,
12c per square yard.

FLOOR FINISHING.

Filled, and one coat varnish,	30c	per	sq.	yd.
" " two coats "	40c	"	"	"
" " waxed coat,	35c	"	"	"
Same, with two coats wax,	45c	"	"	"
Waxing and polishing,	18c	"	"	"
Filled, one coat varnish, rubbed with pumice stone and oil,	40c	"	"	"
Same, with two coats varnish,	55c	"	"	"
Parquetry floor, filled, varnished, one coat, puttied and rubbed,	45c	"	"	"
Same, two coats varnish,	60c	"	"	"
New floor, one coat shellac, varnish, or wax,	14c	"	"	"
New floor, two coats shellac, varnish, or wax,	30c	"	"	"

New floor, three coats shellac, varnish, or wax,	42c	"	"	"
One coat linseed oil,	10c	"	"	"
Two coats linseed oil,	14c	"	"	"

FINISHING INTERIOR TRIM.

One coat first-class varnish or shellac,	16c	per	sq.	yd.
Two coats first-class varnish or shellac,	30c	"	"	"
Staining,	12c	"	"	"
Oiling,	12c	"	"	"
One coat wax,	12c	"	"	"
Two coats wax,	22c	"	"	"
Polishing,	10c	"	"	"
Filling, two coats of hard oil rubbed with steel wool,	80c	"	"	"
Filling, one coat hard oil and one coat wax,	50c	"	"	"
Filling and one coat varnish,	20c	"	"	"
" " two coats "	28c	"	"	"
" " two coats " and rubbed with pumice stone and water,	50c	"	"	"

STAIRS AND OPEN SPINDLE RAIL.

Filling and two coats varnish, $8.00 to $10.00 for the job.

Filling and one coat of varnish, $5.00 to $8.00 for the job.

FILLING ANY TRIM.

Open grain wood, paste filler,	30c	per	sq.	yd.
Close grain wood, liquid filler or shellac,	14c	"	"	"
Steel wool light rub or sandpapering,	12c	"	"	"
Rubbing to satin finish,	20c	"	"	"

RADIATORS.

Painting, one coat,	80c to	$1.00	each
Bronzing, one coat, same price.			
Glazing and wiping out,	40c to	60c	"

ENAMEL.

3	Ground coats,	sanded and	1	coat	enamel		.80	per sq. yd.
4	"	"	1	"	"		$1.00	" " "
5	"	"	1	"	"		1.20	" " "
4	"	"	2	coats	"		1.25	" " "
5	"	"	2	"	"		1.50	" " "

Rubbing to satin finish with pumice and water, 50c per square yard.

PAINTING WALLS.

Size and one coat paint,	18c	per sq. yd.
" " two coats paint,	30c	" " "
" " three " "	40c	" " "
Stippling, one coat,	6c	" " "
" two coats,	12c	" " "

TIFFANY GLAZE,

One color (not including ground coats),	40c	" " "

TIFFANY GLAZE,

Two colors (not including ground coats),	60c	" " "

TIFFANY GLAZE,

Four colors (not including ground coats),	80c	" " "

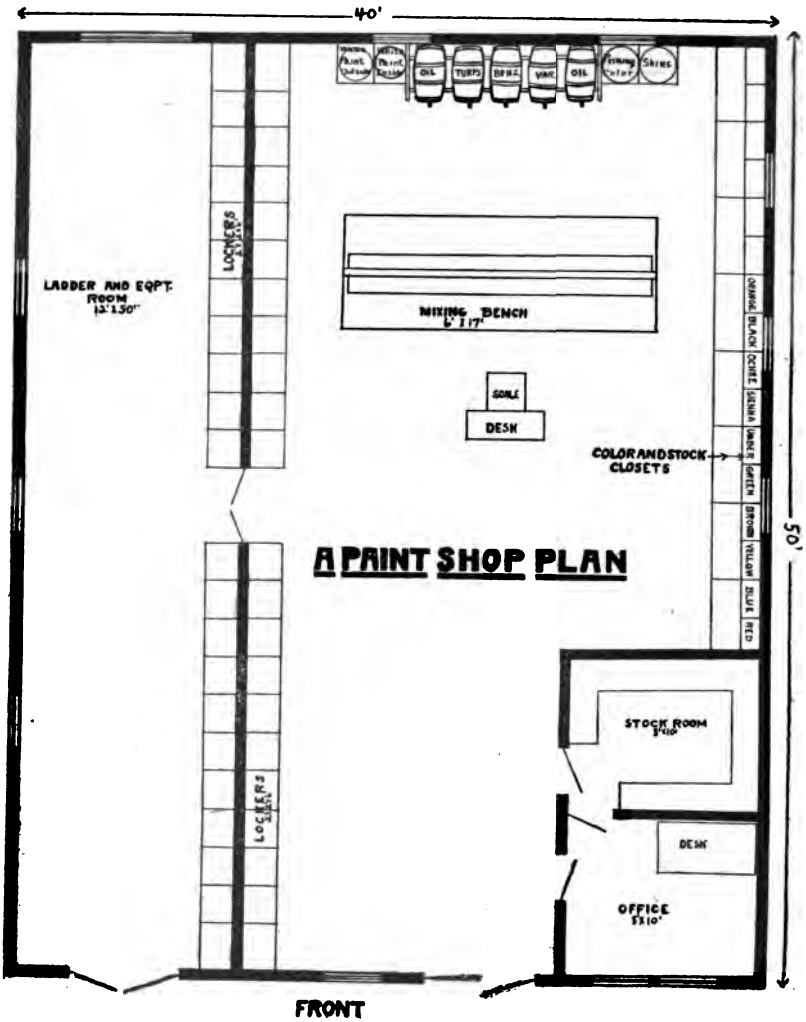
CALCIMINING WALLS.

Smooth plaster, light tints and white,	7c	per sq. yd.
Sand finish or rough, light tints and white,	12c	" " "
Ceilings, light tints and white,	12c	" " "
One coat hard oil size,	10c	" " "

Removing old calcimine, wall paper, filling cracks, etc., charge day work and material cost.

STENCILING.

1 color, 8 in. wide and smaller,	8c	per lineal ft.
2 colors, 8 in. wide and smaller,	12c	" " "
1 color, larger than 8 in. wide,	10c	" " "
2 colors, larger than 8 in. wide,	16c	" " "


40'
50'
LADDER AND EQPT. ROOM 12'1.50"
LOCKERS
MIXING BENCH 6'1.17"
GOALE
DESK
COLOR AND STOCK CLOSETS
ORANGE
BLACK
OCHRE
SIENNA
UMBER
GREEN
BROWN
YELLOW
BLUE
RED
A PAINT SHOP PLAN
STOCK ROOM 3'x10'
DESK
OFFICE 5'x10'
FRONT

Chapter VI
THE MODERN PAINT SHOP—ITS MANAGEMENT

Probably in no occupation is there greater opportunity for waste of expensive material and more expensive time than in that of the contracting painter and decorator. A correct shop system and shop practice such as exists in many of the larger city establishments may appear to require an unreasonable amount of labor doing details and petty tasks, and yet at the end of the season when the reckoning with the books comes, the shop system of many details gives a good account of itself; it may easily lay claim to having earned a generous portion of the profits.

Have you ever gone into a shop employing quite a large number of men where the "do and go-as-you-please" method (or lack of method) is in force and surveyed the ruins? The old saying: "What is every man's business is no man's business" must have been written after the author had witnessed a gang of painters helping themselves in a shop guided by no system. Where only a dozen are employed, and no one man has charge of and is responsible for the materials and shop, no matter how orderly things were at the start, within a week chaos will reign; knives and paddles will be taken out of colors and jammed into white, light paint will be mixed in

dark pots because all the pots are uncleaned, oil, benzine and turpentine taps will be left running, every paint strainer, if there are a dozen, will be choked up with skins, dirty oil and turps will accumulate by the barrel and hard putty will lay around in five-pound lumps while the waste skinned and fatty paint alone will probably exceed the value of several days' labor. And when several men get into the shop at once, what a waste of time at fifty or sixty cents per hour before they can find the material wanted, if indeed it is in the shop.

The contractor with the low bid on a job is not always the one who has sacrificed his profit, but often is a man who by good system and management in the shop and on the job has cut down the cost of doing business to the minimum, his bid is low, but his profit is there just the same.

It is no small task to introduce an efficient shop system and practice where no order prevailed before. The great difficulty is the opposition of the journeymen. The erratic disposition of the painter is an obstacle to overcome; the character of his work seems to develop whatever of the Bohemian there is in his nature. In adopting a new system of shop management a firm and decided course must be determined on from the start. In introducing reforms, the contractor himself must bow to and obey the rules. The work of managing the shop cannot be successfully delegated to one man until it becomes known that the system is part of the establishment, that to obey the rules is a condition of employment and to disregard them means the scratching off of names from the payroll.

ESTIMATES, COSTS AND PROFITS

Every shop of whatever size needs a carefully planned system of management. The shop which cares for but three to six men would naturally require only a simple shop arrangement and system. But at that, if a man is not employed to do all the mixing and care for the shop, an apprentice should be given the task. It will prove excellent training for him if carefully instructed and coached in habits of economy and cleanliness. It will give him a knowledge of materials and help to establish the good and close relations that ought to exist between master and apprentice.

The shop plan here shown is that of a contractor in an Eastern city. A careful study of the arrangement easily shows that there is a place for everything and that everything is kept in its place.

Order, method, cleanliness and compactness greet the eye from every quarter. This shop employs from forty to sixty men, and yet should they all call in the morning at the shop for "orders," every man could be sent out fully equipped with tools and materials in fifteen minutes. Every pound of material and every measure of liquid would be charged on the books. The office force consists of one clerk and the proprietor.

The paint shop is about 40x50 feet, and on one side are closets for storing colors, and on the other side lockers are provided for the use of the men. The general color of ceiling and woodwork is white. Each series of colors is kept in a special closet. Lemon, chrome, orange, raw sienna, several different kinds of ochre, and in fact everything pertaining to yel-

low, are conveniently kept in the same closet. A similar classification is made of the various greens, reds, browns, blues and other colors. The closets are about six feet high, quite deep, and of good width, with a shelf for each species of color, small cans on upper color closet, large kegs below. On the outside of the door of each shelf the name of the color is stenciled. Nothing larger than a five-pound package of color is placed in these closets. They contain an assortment of five, two, and one-pound cans. Most of the colors used in this shop are bought in packages of small size, excepting some of the ordinary colors used for shop mixing. The economy of buying colors in such small packages for a large shop may be questioned, but suppose one of the men estimates that he will need ten pounds of umber for a job. He is given a five-pound can, a couple of two-pound cans, and a one-pound can. It is probable that he will use only seven or eight pounds of color. He is instructed to open the five-pound can first and generally a number of unopened cans would be returned. Had the man been given a ten-pound can, it would probably have dried up and been wasted. All materials are kept under lock and key in the custody of the shopman, and his word is law in regard to the care of material. The closets are so arranged that he is able to place his hand immediately on any particular material.

Now, concerning the shopman, do not think for one moment that such a large shop can be looked after systematically by a boy. Very few boys are systematic, and in addition, journeymen are not in-

clined to pay much attention to even a capable boy.

The lockers for the men are numbered, and large enough to hold two pots and one or two suits of overalls. Each man is supplied with a key, and a master-key for all of them is kept in the office.

In the back of the shop is a large zinc-covered work and mixing bench. On a broad shelf, raised about ten inches above the bench, are kept opened and partly used cans of standing color. No color may be taken from the closets while a duplicate color is on the shelf. In the back of the shop are barrels of oil, turps, benzine and varnish. Over the barrels are racks for cans, which are kept filled from the barrels by the shopman. One rack contains ten five-gallon cans of oil, another rack ten two-gallon cans of oil, while another contains ten one-gallon cans. The same arrangement is made for turps, while varnishes are decanted in one-gallon cans. All these racks are stenciled as to the articles contained in each. The time saved by this arrangement is very considerable. Suppose ten men need oil on different jobs. Instead of waiting to draw from tanks, each man may be instantly supplied from the racks.

White lead for this shop is bought in casks. Three large tubs, with covers, are kept well filled with mixed color in the busy season. One tub contains white mixed for inside work, another contains white mixed for outside use, while the third tub is used for light drab resulting from the mixture of all light colors returned. It is, of course, used up before old enough to become fatty. A smaller tub is provided for dark colors returned.

Every step-ladder, plank, rope, or tool of any description is listed, and all tools sent out on a job are charged on a tool slip, telling exactly their location. The charging of the tools is done by the shopman. When a job is finished, the man in charge is required to make out a list of everything left at the place of work. A printed slip with a space for each of the various tools used by a painter is furnished him. This slip is filled out and given to the shopman, who at once turns it over to the wagon hand with instructions to bring the tools to the shop. The tools returned are compared with the list filled out by the painter, and also with the tool charge slip. If anything is missing, it is at once looked after, and generally found. Under this system, it is not necessary every year to replace a large number of lost tools.

Stock charging is carefully looked after, and the busiest time of the day is from 6:30 to 7 a. m. The shop forces, consisting of the master painter, shopman and clerk, are on hand at 6:30 a. m. The books are taken from the office into the paint shop and placed on a desk facing a fine set of platform scales. These scales having a double-faced beam, the clerk making the entry can at once ascertain the correct weight. Any stock taken out of the shop after the morning hour is charged on stock slips, which are all taken from the file and entered in the books before the day is over.

There are no "leaks" in this paint shop. Each man is supplied with a complete set of brushes—two paint brushes, two sash tools and several fitches, all of which are charged on the books, together with the number of the locker.

When new brushes are needed, the old stumps must be turned in, and there is a regular brush inspection every week. Each man is required to furnish himself with the following tools: One glazing or stopping knife, one broad knife or scraper, a small pointing trowel and a good duster. Clean overalls are required every Monday morning, and a refusal to observe these rules means a resignation from the objector.

Clean pots are furnished the men, and it is made a point that the pots be returned to the shop in the same condition.

The time sheet is issued daily to each man, the day being printed across the face of each sheet. Each day has a different color. The men are required to fill out the daily sheet, embodying a description of the work done by them on that day. Men reporting at the shop the next day are required to hand in their sheets before going to work. Those who do not report, are required to mail them over night and put in their claim weekly for postage. Under this system, all the time worked on any particular day is correctly charged by 10 o'clock on the succeeding day. If fifty men are working, you have a complete journal of their proceedings and can always make out your account without waiting for the weekly time sheet, and without making inquiries among the men.

The daily time sheet seems to entail very considerable work, but in reality it is far less troublesome than the weekly time sheet, and all the time is correctly entered at once.