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THE STORY OF PAINT AND VARNISH. PART III

E. C. Holton, The Sherwin-Williams Company, Cleveland, Ohio

Recent explorations in the tombs of ancient Egypt reveal enough of the art of that time to prove that asphalts, waxes, and resins were used in protective and decorative coatings. Sometimes these were applied in molten condition, at other times they were probably dissolved in natural oleoresins and terpenes.

In the Bible, Genesis 6:14 (2448 B.C.) the command to Noah was, "Make thee an ark of gopher wood; rooms shalt thou make in the ark, and shalt pitch it within and without with pitch."

Concerning the infant Moses and his mother, the Bible states: "And when she could not longer hide him, she took for him an ark of bulrushes and daubed it with slime and with pitch, and put the child therein; and she laid it in the flags by the river's brink." Exodus 2:3 (1571 B.C.).

Today vast quantities of pitch are used in water-proofing and damp-proofing paints and compounds. The pitches in common use today come not only from the asphaltic deposits of Palestine and Egypt but also from many other places and especially from Trinidad, Barbados, and Utah. The residues obtained in the distillation of many petroleums and the still residues of the candle industry, as well as the coal-tar pitches and the pitches of the wood distillation industry, are all useful.

Rubber or caoutchouc, in admixture with oils and resins, enters into the composition of some paint vehicles. The consumption is relatively small.

Vehicles

The liquid portion of a paint is called the vehicle. When the vehicle consists principally of water, the paint is regarded as a water paint; if the vehicle is mainly linseed oil we have a linseed oil paint; if varnish, a varnish or enamel paint.

Whitewash is a water paint made by slaking good quicklime with water. A portion of the calcium hydroxide formed by the slaking actually dissolves in the water, but the greater part remains in suspension as pigment particles. When whitewash is applied as a paint the water evaporates from the solution leaving a coating of calcium hydroxide which cements the pigment particles to the surface treated. The hydroxide soon changes to carbonate through the action of the carbon dioxide in the atmosphere. There are some colored pigments which are not injured by alkali, and these may be mixed with the whitewash to give various tints.

Whitewash, whether white or tinted, not only improves the appearance of surfaces to which it is applied but is also toxic to some forms of insect life and deterrent to others. The disadvantages of this paint are the ease

with which the pigment is dusted off and its permeability to water. It offers but little resistance to rain and moreover is not opaque when wet.

Kalsomine or calcimine is a water paint in which the pigment is largely calcium carbonate or calcium sulfate or a mixture of the two, often tinted with colored pigments. The binding material is usually glue or casein or starchy material dissolved in the water. Dry mixtures of the above ingredients are marketed under various proprietary names. The user adds the necessary water when he is ready to apply them.

In hot-water calcimine, ordinary powdered glue is used. In cold-water calcimine, casein or specially prepared glues are used. Except in arid regions, this paint, like whitewash, is best used on surfaces not exposed to the weather. It is quite extensively used for tinting inside walls of factories, offices, public buildings, and residences but is not equal to the washable interior wall finishes to be described.

The principal binding material used in artists' water colors is usually gum acacia. This is often modified by the addition of glycerine and levulose.

Manufacture and Application

The pigments and vehicles being ready, the manufacturer proceeds to convert them into paint. If a paste paint is desired the pigment is mixed with the selected vehicle in an edge roll mill, a kneading machine or other suitable mixer, until uniformly mixed to the desired consistency. Usually this paste is not sold as first mixed but is ground in buhr stone mills or in roller mills and the resulting product is sold as paste paint. Liquid paint is made by running ground paste into a reducing and mixing tank to which more vehicles are added and the whole mixed until of the proper consistency and quality.

Liquid paints are also made by grinding mixtures of pigments and vehicles in ball mills. In the case of vehicles containing a high proportion of volatile solvents this is an excellent method, since the mill is closed and there is no loss by evaporation. Sometimes liquid paints are made by running mixtures of pigments and vehicles through so-called colloid mills. These mills operate at very high speed. Since they are closed there is no evaporation loss and for some pigments the results are quite satisfactory. By varying the proportions of pigment and vehicle and by selection of the proper vehicle it is possible to make a very wide variety of paints—paints of high, medium, and low gloss; paints of extreme durability for outside exposure and paints of great beauty for inside work but of little durability for outside are all possible today.

Until recently these protective coatings have usually been applied by means of brushes. The brushes have varied greatly in style and size according to the nature of the job and the idiosyncrasies of the painter.

During recent years in many manufacturing establishments the process of dipping has come into use. Paints and varnishes used in dipping processes require more skill in their preparation since the flow must be uniform, the rate of evaporation of the solvent and the drying time carefully adjusted, and the pigment must not settle out of the paint when standing in the dipping tank. This method of painting has been developed to a high degree and very satisfactory results have been attained with both large and small objects. When a dipping process is used the excess paint

Courtesy of the Pittsburgh Plate Glass Co.

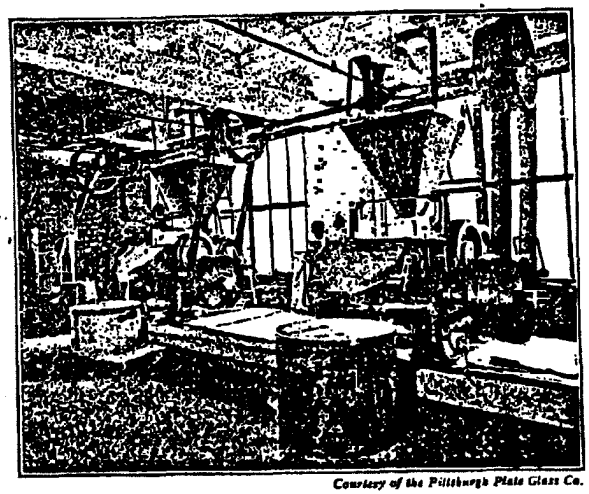
PASTE MIXING

may be allowed to drain off naturally or the painted piece may be rapidly rotated and the excess thrown off by centifrugal force.

More recently spraying has come into use and today all methods are employed.

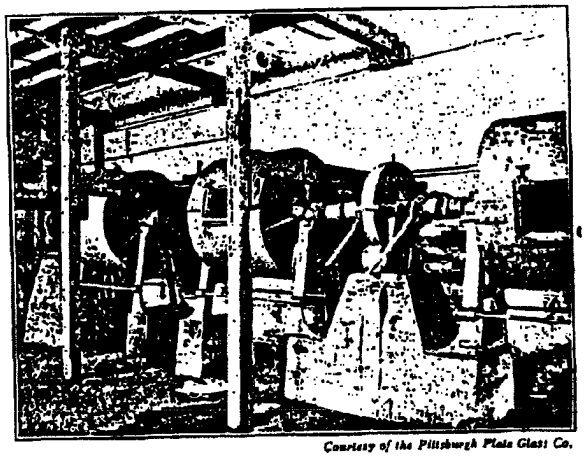
In house painting, and in general painting, except in factories and shops, the painted object is allowed to dry naturally in the air. Many of the old style paints and varnishes require one or more days of natural drying before they are ready for the application of a second coat.

Drying may be greatly hastened by keeping the painted article in a heated room. When wooden articles, such as articles of furniture, etc., are to be treated thus, care must be taken that they do not shrink unduly and become warped and distorted. To avoid this the moisture content of the air in the heated room must be very carefully regulated, as well as the temperature. With metallic objects the moisture content of the



Courtesy of the Pittsburgh Plate Glass Co.

ROLLER MILLS FOR PAINT GRINDING



Courtesy of the Pittsburgh Plate Glass Co.

BALL MILLS FOR PAINT GRINDING

air does not require so much attention but in all cases the temperature must be carefully regulated since the paints and varnishes employed are so designed as to give the best results when kept in the drying chamber for a definite time and at a definite temperature.

The application of paint and varnish by the spray gun has become quite general in shops and factories where proper ventilating systems have been installed.

Quick-Drying Coatings

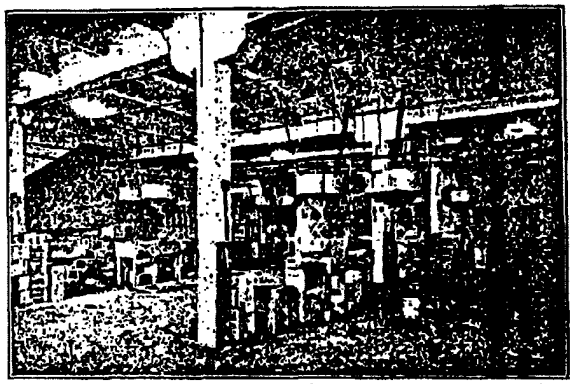
Speed in application having been accomplished, the demand for speed in drying became more urgent. Long oil resin varnishes giving durable coatings were slow in drying and could be hastened only by drying at elevated temperatures, in expensive drying rooms. Ordinary resin spirit varnishes, drying by the evaporation of their volatile solvents, dried rapidly in the air but the films produced were not durable when exposed to the weather.

Cellulose compounds, and especially nitrocellulose dissolved in suitable solvents, have been used as lacquers for about half a century but only in small quantities. The esters, alcohols, and ketones required to properly dissolve them were rather expensive. Prior to the World War these lacquers were used principally in coating leathers, leather substitutes, and in bronzing liquids. During the war cellulose coatings were extensively used on airplane wings, and on top of these coatings "spar varnish," a long oil resin durable varnish, was employed. The nitrocellulose commonly employed in the early lacquers was of such a nature that to obtain a product of brushing or spraying consistency only a very small amount of nitrocellulose could be used. To obtain a film of a thickness and luster comparable to other paints and varnishes it was necessary to add oils and resins to the solution. Thus even from the beginning nitrocellulose lacquers often contained materials other than nitrocellulose and the volatile solvents. At the close of the war very large stocks of nitrocellulose and smokeless powder were available at a low price. In salvaging this material for industrial purposes processes were employed which changed the nature of the nitrocellulose so that it became possible to make solutions of much greater concentration. It was no longer necessary to add large quantities of resin and oil to obtain films of the desired thickness.

A film of pure nitrocellulose is very combustible and in large masses explosively so. Such a film is also rather harsh. Castor oil has long been used as a softening agent in the leather finishes. Castor oil is not a true solvent for nitrocellulose but in the presence of true solvents is miscible with it; the resulting film is softer and the fire hazard much less.

There are many esters which are good solvents for nitrocellulose. If the esters are readily volatile, possess satisfactory odors, and are commercially available at suitable prices they are the solvents of the new lacquer industry. If they are non-volatile or nearly so and possess the other properties enumerated above they are the softeners or plasticizers of this industry.

The alcohols usually are not solvents of nitrocellulose, but in combination with true solvents can be used in very large proportions. Toluol, benzol, xylol, and petroleum distillates are not solvents of nitrocellulose, yet certain proportions of these can be incorporated with esters, ketones, alcohols, etc., in these lacquers. A nitrocellulose lacquer, consisting of nitrocellulose, a non-volatile solvent or plasticizer, volatile solvents, volatile diluents, and



Courtesy of the Pittsburgh Plate Glass Co.

PAINT "FILLING"

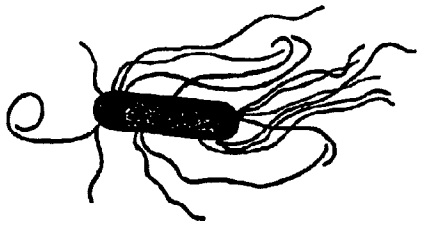
volatile non-solvents, dries simply by the evaporation of its volatile constituents.

Paints made by using nitrocellulose lacquer as the vehicle, in mixture with various pigments, are nitrocellulose lacquer paints. Sometimes they are called pigmented lacquers but usually simply "lacquers."

Thus today the term "lacquer" really means nothing specific, but the manufacturers of nitrocellulose, or pyroxylin lacquers and paints, wish it to be understood that "lacquer" is a new type of protective and decorative coating which can be easily applied, dries quickly, and gives a beautiful and durable finish. The excellence of the finish obtained and the economies effected by spraying and rapid air drying without the installation of expensive equipment have made these lacquers very popular, especially in the automobile industry. Although nitrocellulose of itself is very com-

bustible the films produced from these lacquers consisting of nitrocellulose, plasticizers, pigments, and in some cases fireproofing compounds, resins, and oils, are perfectly safe. Cellulose acetate coatings are also safe but have not yet come into general use.

In another way the war has helped in developing this industry. The British War Department needed acetone in large quantities in its processes for making smokeless powder and cellulose ester coatings for airplanes. In a process for making synthetic rubber, butyl alcohol had been required in large quantities and much study had been made of the microörganism best fitted to produce this compound from starch. This microörganism, *clostridium acetobutylicum*, converts starch into butanol, acetone, ethanol, and other products. Finally, a very virile strain of this microörganism was developed and put to work producing acetone in large quantities in



Courtesy of the Commercial Solvents Corp.

CLOSTRIDIUM ACETOBUTYLICUM
(Magnification about 6000 diameters)

British countries. Later a plant was established in the United States. During the war the plants were operated for acetone. There was no demand for butanol.

After the war, as the new "lacquer" industry grew, a demand for butanol and butyl acetate rapidly developed and today a large and flourishing industry is based upon the activities of the microörganism which produces directly three important solvents. This is not the first and only microorganism working for our industry but its advent into the industrial world has been the most spectacular of all.

During the war there was much talk of camouflage paint and ships were often most curiously painted; field equipment resembled trees and animals and entire landscapes were changed. But the use of paint as a camouflage was nothing new. Primitive man used it as such in attempting to make himself appear more ferocious and modern woman uses it to make herself more beautiful. During the war enormous quantities of paint

were used in protecting field equipment, army hospitals, cantonments, etc.

Paints Widely and Variously Employed

Volumes might be written in describing the structures, vehicles, implements, tools, utensils, toys, and materials to which protective and decorative coatings are applied. Nearly everything made of wood or iron that we see or touch is so protected. That which is not coated soon rusts or cracks and crumbles away.

From the cradle to the grave nearly everything with which we come in contact, except our clothing and food, is painted, varnished, or lacquered. Even clothing and food are not always exceptions. Our shoes are often painted, lacquered, or enamelled; our hats are varnished; and our confectionery coated with shellac or other resin.

Our first couch is a pillow in a lacquered basket in a room with hygienically enamelled walls. Our first toys, blocks, wooden soldiers, bats, balls, and dolls are gaily decorated with paints and lacquers. We coast on a varnished sled with letters and scrolls of paint. We ride on an enameled tricycle or bicycle or in a lacquered automobile. We live in a painted house. Arising in the morning from our enamelled couch we step on a rug which slips on a varnished floor. We turn a lacquered knob, open a stained and varnished door and enter an enamelled bath room, slide back a lacquered bolt, turn a lacquered faucet, and, looking into a mirror with enamelled frame, proceed to the morning's ablutions. In the breakfast nook we sit on a lacquered chair, eat from painted china resting on a varnished table. The trolley car which takes us to our office is painted and varnished or our auto is lacquered. Lines designating traffic routes are painted on the street. Painted telephone and telegraph poles and guide posts are seen along the way. Street signs and license plates are painted and varnished or lacquered.

Wherever we go—office, club, theater, church or home, our lives are made brighter, happier, and healthier by the ever-present paint, varnish, and lacquer.

Prepared Paints

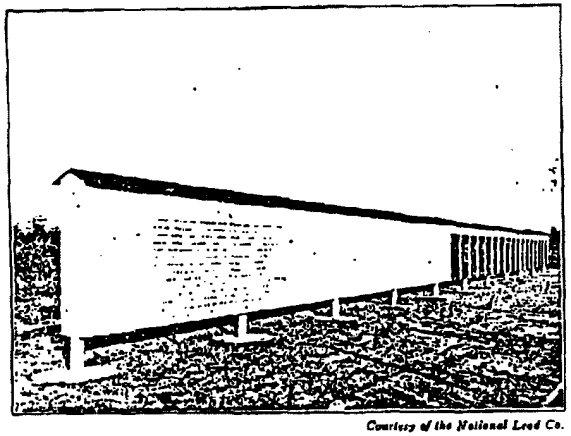
Africa and Asia were first in giving the world paint. Europe improved it but it remained for the United States to popularize its use.

The temples of the Ancients, the cathedrals of Europe, and the art treasures gathered together in the museums of the world all give evidence of the inspiring and elevating influence of paint upon the mind and character of man. The artist, the master painter, has been honored in every age although there have been many instances of individuals whose work has not been appreciated during their short lifetimes.

The high born, the rich, and the powerful have always been able to com-

mand the services of the artist and to surround themselves with the beauties of his art and his handicraft. Not so, however, for those in the humbler walks of life. An occasional glimpse into the temple, or cathedral, or museum, or at the passing equipage of nobility, was their only contact with paint. Today all is changed. The introduction of prepared paints, a little more than half a century ago, ushered in a new era.

No longer was it necessary for the painter's apprentice to spend the best years of his life in laboriously grinding by hand the colors for his master's use. It now became possible for the master to take his apprentice with him



Courtesy of the National Lead Co.

A PAINT TEST FENCE

and instruct him in the essential details of preparing the surface and then applying the priming and subsequent coats of paint. With the emancipation of the painter came a great increase in the use of paint. New factories sprang up and old ones increased in size and efficiency. Thousands of new formulas were developed and specific protective and decorative coatings were designed for almost every conceivable construction. The better organized institutions were constantly testing their products by independent practical tests and by keeping records of their customers' reports.

Nevertheless, there were some coatings that failed miserably and investigations were made by State and Federal institutions and some legislation followed. This legislation, which was feared at first, ultimately

reacted to the benefit of the industry since it quickened the interest of the public in the matter of protecting their homes and making them more hygienic and beautiful. In the general enlightenment that followed, the householder, his wife, and his children soon learned that even a novice could produce beautiful results with the improved materials. Never before in the history of the world have the habitations of men been so well protected from the weather, so attractive in appearance from without, and so beautiful and hygienic within, as so many of them are in America today.

Paint Materials Gathered from Many Sources

From mountains and hillsides, the forests present their offerings. The lacquer or varnish trees of the Orient yield a natural varnish. The walnut and tung trees shower us with nuts rich in oil. Gum camphor distils from the laurus. The cone-bearing trees of today exude terpenes and resins during life, and provide cellulose after death, while those forests which existed ages ago have left vast treasures hidden in the earth. From the rubber tree the latex flows, and many are the trees and shrubs which yield their dyes or offer sustenance to the lac insect, the cochineal, the gall fly, and the honey bee. Even those trees which are of little other worth provide us with pigment charcoal, methanol, acetone, shingle-preservative oils and acetic acid for use in making esters.

The farmer on the plains grows flax and perilla, sunflower and poppy, soy bean and maize that we may have oil; cotton and maize for cellulose; corn, potatoes, and sugar cane for starches and sugars, to be converted into lacquer solvents.

The sea provides menhaden for oil paints, cuttle fish (sepia) for water colors, and sponges for the application of paints. Under the waters lie amber and asphalt and petroleum.

From the slime of the bog bright colors emerge, and quarry and mine contribute their pigments and ores from which pigments are made.

In the contemplation of coal and petroleum words fail. From these by distillation and synthesis chemists are producing volatile solvents, oils, resins, and pigments which can be used in making beautiful and durable protective paints, varnishes, and lacquers.

Thus we have seen that the paint, varnish, and lacquer industry is the broadest of all industries. Its demands upon nature have been unceasing and she has responded most bountifully. Inspired by the glory of the heavens, the grandeur of the mountains, the solemnity of the plains and the ceaseless activity of the seas, man has brought to our industry the treasures of the earth.

We have refashioned these and broadcasted them over the world so that the perishable structures of man may be ever protected and health, beauty, and inspiration may prevail in his humblest habitations.

The Denver White Lead Co.

Manufacturers a Strictly Pure White Lead, that for

Whiteness,
Fineness, Body,
Covering Capacity
and Durability

is unsurpassed by any brand on the market, and wherever it has been used has justly earned the title,

"THE BEST ON EARTH."

We print a few of the many letters received from some of the leading Painters and Dealers, to which we invite your attention.

Fac Simile of Guarantee on every package.

This Package contains 92 per cent Carbonate of Lead and 8 per cent Linseed Oil.

THE DENVER WHITE LEAD CO.

will pay $500 and cost of analysis for the detection of any adulteration in this or any other of their packages bearing this brand.

THE BEST ON EARTH.

We have a perfectly equipped factory, with every modern appliance for thoroughly corroding, washing, drying and grinding our product, located in **Denver, Colo.**

Our claims for patronage are based upon the grade and price of our product and our **positive guarantee of giving entire satisfaction** in every respect.

We earnestly request that **First-Class Painters** shall make thorough, **comparative** tests with other standard brands.

C. J. KELLY, PRINTER, DENVER

DENVER WHITE LEAD CO · MOUNTAIN BRAND · STRICTLY PURE WHITE LEAD · DENVER COLO

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FOR SALE BY

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Drugs, Paints and Oils.

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By Permission We Refer You to the Writers of These Letters.

[illegible] Paint Co.,
[illegible]
[illegible] Colo., Aug 13, 1892.

The Denver White Lead Co.,
Denver, Colo.

[illegible] reply to your favor of July 21st, would say, that [illegible] we have given your lead a thorough and practical test [illegible] and are pleased to state that your lead has [illegible]. If you maintain the present quality we shall be [illegible] through. Wishing you [illegible] in your enterprise, we are yours truly,

The Denver Wall Paper & Paint Co.,
[illegible] H. Parker.

P. S.—Please send [illegible]

[illegible] & L[illegible],
33 W. First South Street,
Salt Lake City, Utah, July 26, 1892.

The Denver White Lead Co.,
Denver, Colo.

Gentlemen—Yours of the 21st to hand, and, in answer to the same, concerning the satisfaction your lead gives we must say that it gives good satisfaction, we have heard no complaint from anyone so far, and we have no doubt but what it will prove entirely as good as it is represented to be.

Yours very truly,
Sears & Liddle Co.,
A. H. B.

The Decorative Art Co.,
Denver, Colo., Aug, 18, 1892.

The Denver White Lead Co.,
Denver, Colo.

Gentlemen—We have been using your lead in large quantities and find that it gives entire satisfaction. We have used it in the construction of the Brown Palace Hotel, and also in other prominent buildings, and we cannot praise it to highly.

Yours respectfully,
The Decorative Art Co.,
L. Tomoor, Supt.

The Hallack & Howard Lumber Co.,
Larimer and Seventh Streets,
Denver, Colo., Aug. 17, 1892.

The Denver White Lead Co.,
Denver, Colo.

Gentlemen—Yours 21st ulto., was [illegible] received. As we had only handled your lead for a short time, we concluded to hold our reply for a time, to see if we had any co[illegible] from our customers regarding it. We are pleased to state that the lead has sold well, and we have not received anything but the most flattering reports of the same, and in cases where we have used it ourselves, it has proved entirely satisfactory in every respect. We feel no hesitancy in recommending it most strongly.

Very truly yours,
The Hallack & Howard Lumber Co.,
Wm. H. Dellcker, Secretary.

The L. C. Reitze & Bros. Wall Paper & Dec. Co.
1611 Welton Streets,
Denver, Colo., Sept 23, 1892.

The Denver White Lead Co.,
Denver, Colo.

Gentlemen—I wish to inform you that we made a test of your lead in comparison with Harrison's Strictly Pure and Southern Strictly Pure. One wall was painted with Harrison's, one with Southern and one with Denver White Lead, all work was done by one man who was not interested in the result. Upon examination we found that the **Denver Lead is 25 per cent. better than the others in covering capacity, fineness and whiteness.**

I have taken pains to examine several other jobs, where your lead has been used (done by us), and am very highly pleased with same.

Yours very truly,
The L. C. Reitze & Bros. Wall Paper & Dec. Co.

G. J. Vieira Decorative Co.,
1714 Lawrence Street,
Denver, Colo., Sept. 6, 1892.

The Denver White Lead Co.,
Denver, Colo.

Gentlemen—We have used your Mountain Brand of lead and are perfectly satisfied with results, and believe it to be as good or better than any in the market.

G. J. Vieira Decorative Co.

The Hallack Paint, Oil & Glass Co.,
Office, 1821 to 1827 Market Street,
Denver, Colo., Aug. 18, 1892.

The Denver White Lead Co.,
Denver, Colo.

Gentlemen—Judging from the demand on us for your "Mountain Brand" Strictly Pure White Lead, which has grown steadily and which we are now selling in large quantities both to the local trade and in the surrounding country, we are glad to state that it is giving the best of satisfaction in every particular and we see for it a large and increasing demand.

Our sales for April when we first took hold of the lead, amounted to seven tons, and for the month of July, it shows the remarkable increase to twenty-two tons. All who have used it are loud in their praises, and the universal verdict is, "The best we have ever used."

We wish you the success with its sale that the product truly merits.

Yours very truly,
The Hallack Paint, Oil & Glass Co.,
F. B. Whipple, Treasurer.

L. A. Richards & Co.,
1521-1525 Platte St

The Denver White Lead Co.,
Denver, Colo

Gentlemen—We have sold The Denver White Lead Company's white lead and find it very satisfactory in every respect.

L. A. Richards & Co.

Frank A. Hyatt,
Alamosa, Colo., Sept. 16, 1892.

The Denver White Lead Co.,
Denver, Colo.

Gentlemen—I have been in the painting business for thirty years and have used all kinds of lead and never found any lead as fine, white and pure as the Denver White Lead.

Respectfully yours,
Frank A. Hyatt.

Wilmohr & Co.,
1636 Arapahoe Street,
Denver, Colo., Sept. 23, 1892.

The Denver White Lead Co.,
Denver, Colo.

Gentlemen—We have tried your lead and are more than pleased with it. It is the best lead we have handled in years, and we shall use no other in our work hereafter.

The Wilmohr Wall Paper & Paint Co.

We respectfully request you to designate The Denver White Lead Co.'s Strictly Pure White Lead in your future orders.

0007-SWP-041682

0007-SWP-000125071

IMPORTANT FACTS ABOUT HOUSE PAINTING

The Kind of Paint to Use; How to Apply It; and How to Get Attractive Color Combinations.

THE KIND OF PAINT TO USE.

THERE are three classes of house paint to choose from—*good* prepared paint, honestly and correctly mixed by machinery, ready for use; white lead and oil, bought separately and mixed for use by hand; and poor, low priced prepared paint made by those who are willing to sacrifice quality, and true economy, in order to sell "cheap".

Good prepared paint is the best to use. That it is better than the "cheap", low quality paints goes without saying. It is also much better than hand mixed lead and oil, as the following statements will show.

Some thirty odd years ago hand mixing of white lead and linseed oil was the only way of making house paint. In those days The Sherwin-Williams Company would have recommended it to you and would have told you how to be careful about the quality of the lead and the purity of the oil. But you would have had to do the mixing yourself or get a painter to do it, and no matter how good the lead or how pure the oil you would still have had an unsatisfactory paint.

Lead and oil when applied to a surface soon lose their lustre and powder and chalk badly on account of the saponification of the oil. Further than this, hand mixing can not thoroughly and properly incorporate the lead with the oil.

Since those days the quality and character of white lead have not improved any, but two other important improvements have been made.

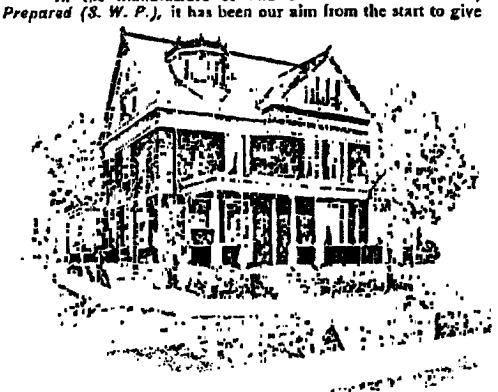
First, it was discovered that the chalking and powdering of white lead could be overcome by the addition of oxide of zinc—a pigment that produces a harder surface, is whiter, combines better with the oil, keeps its lustre longer and spreads farther than the lead. Oxide of zinc alone would not make a satisfactory house paint any more than white lead alone, but the two, when properly combined, give excellent results.

The second important improvement is the substitution of machinery for hand work, by which the oil and pigment become more intimately united and the pigment more finely ground—two very vital points in the making of good paint.

With these marked advantages good prepared paint is rapidly displacing lead and oil, not only for house painting, but also in the large railway paint shops, in marine painting, and other places where the best and most economical results are required, and where the truth about paint values is thoroughly understood.

There are only three reasons why lead and oil are now used at all—the fixed habit of some who are slow to change from old methods to new; the prejudice of those who have been fooled by the "cheap", low quality paints; and the fact that the makers of white lead resent the introduction of oxide of zinc as a paint pigment and continue to urge the use of lead and oil alone in order to keep up the proportion of lead used.

In the manufacture of *THE SHERWIN-WILLIAMS PAINT, Prepared (S. W. P.)*, it has been our aim from the start to give



Painted with

THE SHERWIN-WILLIAMS PAINT

The best good prepared paint made.

a paint of such unquestioned quality as to be its own best argument against habit, prejudice and competition. It is a correct combination of pure white lead, pure oxide of zinc and pure linseed oil. It is ground and mixed with the greatest skill and care and will give the largest amount of satisfaction to the user, in durability, appearance, spreading qualities and economy. We have believed in the economical value of prepared house paint and have always made but the one quality—the best that can be produced.

As a result we have built up the largest paint business in the world, requiring five big factories, in Cleveland, Chicago, Newark, Montreal, and London, Eng., with offices and warehouses in the principal cities and thousands of retail agencies. There is no other paint so widely known and used. Its popularity is the best argument that can be advanced in favor of good prepared paint.

We maintain the quality of *S. W. P.* by controling most of our raw materials and by manufacturing at so favorable a cost and in such large quantities that we never have to sacrifice quality to get a right selling price.

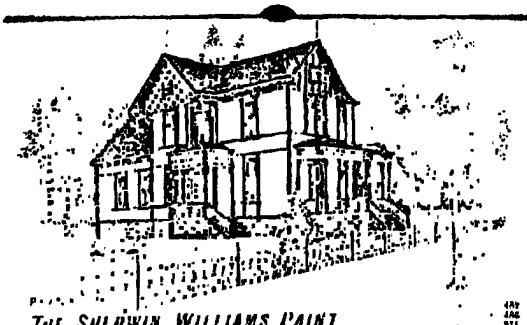
We operate our own lead and zinc mines and smelters, make all our own linseed oil, manufacture our own dry colors, design and build all our paint machinery, make all our tin cans and packing cases, and print our own labels. In these ways we are able to put into the quality of *S.W.P.* the profits that would otherwise go to outsiders in the purchase of materials. We are also able to get better quality and uniformity of materials.

The splendid quality of linseed oil we are able to produce in our mills is, alone, sufficient to give *S. W. P.* a great advantage over any other paint.

To sum it all up, there is no possible way of making a paint that is better than *S. W. P.* It will wear longer, hold its gloss longer, look better, cover more surface and prove more economical than any other paint.

HOW TO APPLY PAINT.

COMPLETE directions for the use of *S. W. P.* are given on each package, but we give here some of the principles of good painting that are necessary to obtain best results. A good job of painting is the sum of three factors—good paint, good surface, and good painter. We can furnish the paint only.



THE SHERWIN WILLIAMS PAINT

Saves in material and in cost of application.

Painted with