HISTORY
OF
SHERWIN-WILLIAMS PRODUCTS
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The use of paint as a protective coating has come down to us from remote antiquity. Even Noah "pitched the Ark within and without with pitch" and the mother of Moses placed him in an ark of bulrushes which she "daubed with slime and with pitch." At later periods the Jews evidently used paint on their houses, as in Jeremiah appears—"Woe unto him that sayest, "I will build me a wide house—ceiled with cedar and painted with vermilion." (Even then it was bad taste to paint a house with vermilion.)

Its uses for decoration and picture painting began very much earlier. Pictures of bison, wild bear, reindeer and other animals have been found in some caves in Spain. These were evidently the work of cavemen and date from the Paleolithic age, probably 50,000 years ago. These prehistoric pictures are real masterpieces and are far superior to pictures of battles and hunting scenes on the walls of Babylon erected about 2500 years B.C. and wall paintings found in tombs in Thebes dating from 1500 B.C. The picture of the bison is in reality an animated cartoon, illustrating the animal running—the legs are shown in three positions, at the beginning, middle, and end of the stride. (Perhaps this was an inspiration for the present day movie cartoon artists—the artist may have been Walt Disney's ancestor.)

In the British Museum are many mummies elaborately decorated, the oldest of these is that of Menkara who lived about 4000 B.C. Many beautifully painted things were found in the tomb of King Tutankhamen where they had lain undisturbed for 3300 years. These references seem to establish the use of paint at least 4000 years before the coming of Christ.

The art of painting developed much more slowly than did sculpture. This was undoubtedly due to the crude nature of painting materials available rather than to the skill of the artist. Greek sculpture attained a high state of development as early as four or five centuries B.C. but the art of painting was not fully developed until the remarkable works of the Italian masters in the fifteenth century. Pliny, who lived A.D. 23 to 79 and was killed when the eruption of Mount Vesuvius destroyed Pompeii, writes of painting as a waning art, but from the records there must have been some wonderful painters among the ancient Greeks. Zeuxis and his rival Porhassius about 400 B.C. according to legend contested as to which was the better painter. Zeuxis painted grapes so truthfully that the birds pecked at them. Porhassius painted a picture of curtains only—Zeuxis asked him to remove the curtains so he might see the picture. Porhassius got the prize because it was harder to deceive man than animals. Apelles won the prize in a contest to see who might paint the most life-like picture of a horse. Feeling that he would not receive justice at the hands of his fellow-men, he arranged for a jury of 12 horses to judge the pictures. Every contestant's picture was shown to this intelligent jury, but they gave no sign of recognition until Apelles' picture was put before them and then they all neighed and Apelles got the prize!

The materials used by the ancients were probably all minerals, natural earth colors, organic dyes from plants, and waxes. The old Greek philosophers are the first to give any definite reference to detail. Theophrastus, writing about 350 years B.C., refers to "cerussa" a native mineral carbonate of lead found in small quantities in Europe, and Pliny records the mode of boiling wax and painting ships with it after which—"neither the sea, nor the wind, nor the sun can destroy the wood thus protected." (First reference to—"Save the Surface and you Save All.")

The Romans, being essentially a war-like people, never brought the decoration of buildings to the high plane it reached with the Greeks, though the ruins of Pompeii show many structures with mural decorations in very fair condition. The colors used are glaring, usually a black background with bright red, yellow, and blue. The black was, undoubtedly, Lamp Black; the Red was the mineral Cinnabar, natural Vermilion referred to by Theophrastus and Pliny. This has stood for these centuries with little change of color.

The yellow, no doubt, was Yellow Ochre, as pots of Yellow Ochre were found at Pompeii, and the blue, undoubtedly, was Lapis Lazuli, the true native Ultramarine Blue which is found in Persia. A remarkably permanent blue used in Egyptian tombs, erected about 3000 B.C., was recently analyzed. This was found to be very similar to present day Ultramarine. The chemists analyzing this concluded it was an artificial pigment.

The earliest reference to the manufacture of any paint material is by Theophrastus, who described White Lead as prepared from lead and vinegar evaporated to dryness. Pliny again mentions it. It is not known when the white lead of today was first made, or to what country it owes its birth, but tradition assigns discovery of the method to the Dutch and a man named Stratingh. It must be over 300 years old, as a patent for a method like the present Old Dutch was taken out in England in 1622. The length of time involved, encouraged effort to develop a more rapid method and the first quick process on record is the Chamber process patented by Sir James Creed in England in 1749. Many other processes have been invented but the most satisfactory one now in use is the Carter process patented in July, 1889.

Zinc white seems to have been suggested first by Courtois of Dijon, France, in 1782, and after several unsuccessful attempts to use it for a paint material, Leclair in 1845 found a method to use it for oil paints. Up to this time, all zinc oxide was made by the French process from vapors given off by a bath of zinc metal. Zinc oxide has always met with much favor in France and recent legislation has been enacted prohibiting the use of lead carbonate in paints. In 1856 Wetherill patented the American process of making zinc oxide directly from the ore, mixed with coal, by volatilization on a grate.

In 1879 the Lewis patent for making sublimed lead was taken out. A vein of lead and zinc ore was discovered in 1870 and smelting it by the Lewis method developed leaded zinc like the Ozlo pigment made by the S-W Company. Zinc Sulphide has recently been accepted most favorably on account of its intense whiteness and great opacity.

Lithopone was first patented in 1874 under the name of Orr's White. There are many variations in the manufacturing process now in use, but all produce a material essentially the same. Present methods produce a very fine intensely white pigment specially adopted to flat wall paints. There are four distinct types—Barium Lithopone, Calcium Lithopone, Titanated Lithopone and High Strength Lithopone. The consumption of Lithopone now exceeds any other white pigment.

The element Titanium was discovered in 1791 in England occurring in the form of black sand. It was first called Titanic Earth, having reference to the mythological sons of the earth. From this the name "Titanium" was derived. The first attempt to use Titanium Dioxide as a paint pigment is credited to J. W. Ryland, Birmingham, England, in 1869. However, it was not developed definitely as a white pigment until 1908 by Dr. Rossi of the Titanium Alloy Company of Niagara Falls. For a time, most of the material was made from Florida sands, but now most of the primary material comes from Ilmenite developed in Indiana. Its brilliant whiteness and great density of color made it a most acceptable pigment for high grade house paints and include Barium Sulphate (Borgtes); Magnesium Silicate (Asbestine); Calcium Carbonate (Whiting); Silica; China Clay; Calcium Sulphate (Gypsum); etc. They occupy a very legitimate place in the industry for many purposes beyond that of reducing the cost as substitution for a proportion of more expensive pigments.

Black appears to be the earliest coloring pigment used, as from time immemorial soot has been used by savage tribes to paint their faces and color other objects they wished to beautify in this way. Black substantially the same as our present Lamp Black was made by the Chinese at least 2000 years ago by burning oil in small earthenware lamps with a limited supply of air and collecting the soot thus condensed. Asphalt or Bitumen found on the shores of the Dead Sea, were used by the early Egyptians on mummy cases. At a much later date, in Europe, Ivory and Bone Blacks were made by burning ivory cuttings or bones in closed retorts and grinding and refining the charred residue. Frankfort or Vine Black was made by a similar method using vine cuttings, stones from plums, olives, almonds, or similar fruits. Carbon Blacks, made by the incomplete combustion of gas, was first made in this country in 1864.

The earliest blue on record is Indigo used in India and Egypt and mentioned by the ancient Byzantine writers as well as Pliny and others. It is named in the Marseilles Tariff of 1226. Natural Ultramarine Blue, Lapis Lazuli, was used many centuries ago, but ultramarine was first made artificially by Christian Gmelin in France in 1828. Prussian Blue was first made in 1710 by a color maker named Diesback in Berlin. The J-W Co's first connection with the industry was through Lewis Steigenberger, who came to London in 1760 and started the manufacture of Prussian Blue in England. He was the founder of Lewis Berger & Sons, Ltd., our present English connection, and the formula used by us today in making Prussian Blue is modified only slightly from his method. His method illustrates a formula we have dated 1756 in which he states he started with three pounds of Ox's Blood and through a complicated procedure finally resulted in 7 ounces of fecula "whose beauty will make sufficient amends for the small quantity, as it will surpass in this respect all the blues of Prussia which are prepared by other methods."

Malachite green copper mineral was employed by the ancients. Verdigris was used by the Romans as a pigment and has been detected in the wall paint of Pompeii. Paris Green or Emerald Green was discovered in 1814, though Scheele's Green very similar to this was made in 1778. This pigment is little used as a paint material now. Chrome Greens essentially the same as those now used were first made in France in 1838.

Yellow Ochre, one of the most ancient pigments, was used by the Egyptians, Greeks, and Romans. Naples Yellow, which is basic lead antimoniate, has been found on Babylonian bricks at least 2500 years old. Chrome Yellow, lead chromate, in common use today, was first made about 125 years ago, though some is found in nature.

The browns, such as Umber, Sienna, Iron Oxide, etc., were natural earth colors which probably were some of the earliest pigments used for decorative purposes. In the early days the Berger Company offered Mummey Brown which actually was made from the body of a mummey ground up in poppy seed oil. Shakespeare had Othelloe give Desdemona a lace kerchief dyed with Mummey.

The earliest red pigment about which we have any information is the native Cinnabar, mercuric sulphide, used by the ancients and Chinese. Chinese or English Vermilion is now produced artificially by combining mercury and sulpher in a process submitting it to sublimation or by a wet method. This manufacture was first undertaken in England about 150 years ago. Red pigment using organic dye derived from the madder plant, a native of Greece, was made in Europe in the 13th century, though madder was used by the greeks and Romans for drying long before it was used for painting. Many other organic dyes have been used, but these have been largely displaced by aniline dyes first discovered by Dr. William Henry Perkin in 1856. He made, in that year, a mauve dye used to dye silk for a dress for Queen Victoria. For this he was knighted.

The history of paint vehicles and varnishes can be presented much more simply than that of pigments. The pitch that Noah used was, undoubtedly, a form of crude petroleum, and it is remarkable that no other substance has been discovered that is so well adapted to protect surfaces against moisture. Our present day Ebonol and other roofing materials are direct lineal descendants.

Waxes were first used as the vehicle for colored paints. Excellent examples of the use of melted wax as a binding medium for pigments, executed in the second and third centuries, are shown in London museums. Later, evidently, a mixture with oil or animal fat was used to lessen the inconvenience of heating the wax. For interior decoration a size made with fish glue, gum arabic or similar gum or the white yolk of an egg, were the earliest mediums used.

The earliest mention of drying oils as a paint vehicle is by Aetius, a Greek physician, in the beginning of the sixth century. This may have been Linseed Oil. Heraclius, in the seventh century, first mentions the mixing of oxide of lead with oil to make it dry quicker. In the library at Lucca is a manuscript of the eighth or ninth century, giving a recipe for a transparent varnish composed of Linseed Oil and Varnish Gum, probably amber. Oil painting had been definitely established as early as A.D. 1100, though in an unsatisfactory form. In fact, the art of painting was very crude until the fifteenth or sixteenth century when it underwent a transition from ancient to modern art. About this time, other oils such as poppy seed oil and walnut oil came to be much favored. Linseed Oil is the best known and most widely used oil in the paint industry which position it has held for centuries.

China Wood Oil, or Tung Oil, though employed by the Chinese from time immemorable, in finishing their junks and for lacquers, was introduced into the manufacture of varnishes only about 40 years ago. Dependence on China as the sole source for Tung Oil has frequently caused great disturbances in the paint and varnish industry. Many attempts have been made to grow it in this country. Some of the latest developments in Florida and Mississippi seem to be quite promising.

Perilla Oil was first introduced into the United States in 1910 by Dr. Fairchild, explorer of the Bureau of Plant Industry. The good drying quality made it very desirable in paint and varnishes. Experimental plantings in the United States have been conducted since 1917 with encouraging results, but as yet no considerable quantity is grown here.

Soya Bean Oil was introduced into the United States for use in paint and soap [illegible] 1908, though the Soy Bean has been an important food product in China and [illegible] since ancient times. This use of this oil has recently been most vigorously promoted, but its slow soft drying quality prevents its use except with liberal proportions of other drying oils.

Fish Oil obtained from the bodies of many fish, particularly the Menhaden, Pilchard, and Sardine, properly refined, is especially useful in coatings for metal surfaces subjected to heat.

Turpentine from European pine trees dates back for many centuries, but American Turpentine that we know today was first developed by the early settlers in the southern states about 300 years ago. During the past 25 years, very satisfactory turpentine has been distilled from old pine tree stumps; also, Sulphate Wood Turpentine has been recovered from pulp wood used in paper manufacture.

Naphtha and several grades of Mineral Spirits are, of course, developments from Petroleum discovered in the United States by Col. Drake who sunk the first oil well in Titusville, Pennsylvania, in 1859.

The varnish gum first used, no doubt, was amber as it is found quite generally throughout Europe and beads made from it were found in early British graves and Etruscan tombs. Other varnish gums such as Zanzibar, the Sierra Leone, Benguela, Mastic, Sandarac, no doubt, preceded the modern Kauri and later Manilla, Brazilian, and Congo gums. Shellac has been known to the natives in India for several thousand years and used as a varnish gum for some centuries, as a manuscript issued by Akbar, emperor of Hindustan in 1590, mentions the proportion of Shellac Gum to be employed in varnish used for the woodwork of public buildings. (This seems to be the first definite reference to specifications for paints or varnish materials.)

Natural Resins have now been almost entirely displaced by a wide variety of Synthetic Resins which produce finishes far superior in every quality.

Prepared paint was first produced by a practical painter and chemist named Quarterman, who established himself in New York about 1819 and beginning 1842 confined his efforts solely to the making of prepared mixed paints and filling same in sealed packages for transportation. E. R. Averill of Newburgh, suburb of Cleveland, Ohio, was awarded a patent in 1867 for a prepared paint composed of 200 pounds of Zinc Oxide, 26 gallons of Linseed Oil, 6 gallons of Benzine, and 6 gallons of Acetate of Lead, Sulphate Zinc and Silicate of Soda Water Solution. "One pound produces a white, glossy, cheap, endurable paint." This patent paint was soon found to be very unsatisfactory and such prepared paints soon acquired a bad reputation from which they have never fully recovered.

This background of ancient history brings paint and varnish products through centuries of slow progress down to 1866 when Henry Sherwin entered the business as a dealer in paints, oils, varnishes, etc. with Truman-Dunham & Co. In 1870 Mr. Williams came into the firm, the former partners retired and a new partnership was formed under the name, Sherwin-Williams & Company. Mr. Fenn also entered the service during this year. In 1871 the partnership of Murphy-Sherwin & Co. was formed for the manufacture of varnishes. This connection continued for a number of years until in 1888 the interests were marged with the Sherwin-Williams Company The manufacture of paint was first undertaken in 1873 when a building on the site of the present Cleveland plant was bought.

No authentic record of details exist prior to a small book started in Mr. Sherwin's own handwriting, October 25, 1873. The first formula recorded is for Guaranteed Strictly Pure Raw Umber in Oil, the product being the highest quality it is possible to make. It is particularly interesting to note that this first formula shows a complete system of code numbers for raw materials and formulas practically the same as that in use today. The numbers 21 Raw Turkey Umber, (2) Raw Linseed Oil and (7) Japan, specified in this formula today carry just the same meaning.

The cost was figured by a method far in advance of the time and applied the same fundamental principles as are used for the basis of our present very complete cost accounting system.

The line of Guaranteed Strictly Pure Oil Colors was found to be much too good for the trade and cheaper lines of Oil Colors were produced shortly afterward, sold under the labels Standard Color Works, Imperial Color Works, and Cambridge Color Co., Colors in Oil.

The labeling and branding of products from the very first has been most conscientious, great care being used to make no mis-statement as to the quality of the product. Sherwin-Williams Company's name was used only on goods of the highest quality for the purpose intended, another quality made did not show S-W name on the label. Illustrating this policy the name of "Guaranteed Strictly Pure Color in Oil" line was changed to "First Quality Colors" chiefly because chemically pure Greens were found too strong for practical use and the material was changed to 25% strength. The presence of 75% Barytes did not permit the sale under the name "Guaranteed Strictly Pure."

During this first year 83 different formulas were made, a total of 450,000 pounds. All this tonnage was oil paste paint and graded leads.

The earliest formula recorded and still in use without material change is Rex 8, American White, which was originally brought out under the label of Navy or Eagle White, October 31, 1873.

At this time a line of lead and zinc tinted paints was produced under the label Cottage Colors; this later developed into the present PCP line.

Special paint for agricultural implements is first recorded November, 1873. French Zinc in Varnish, China Gloss, was first made January, 1874, and has been continued under this same name and Rex Number 24, unchanged to the present day. French Crown Green was first made in March, 1874, on the same formula and number as at the present time. Distemper Colors and O.B. Colors were first made in May, 1874, and in October of the same year Graining Colors were produced, the formulas being practically the same as those now in use. The first liquid paint on record was a Blue Enamel made on March 5, 1875.

The manufacture of tin cans was taken up during 1875 and a special type of press can was patented in 1877.

The Company soon found that paint grinding machinery available was far from what was required and concluded the only way to get a mill that was dependable for the high quality of product to which we aspired was to design one for our own use. Accordingly, about 1875, a great deal of study and engineering skill was devoted to the problem and the present type of standard S-W mill was the result. Many refinements have been added since, but the fundamental idea was so far in advance of the time that the mills used by S-W were of our own manufacture and are far more efficient than any offered on the market. As new types of roller, ball, and pebble

mills of that type and others have been developed, the Company has installed these in all plants.

First Quality Colors under this label were first produced in July, 1876. These goods were not then strictly pure, but represented a better quality than any other offered on the market, except the Quaranteed Strictly Pure Oil Colors which had been struggling along for the three years previous. It is very gratifying to note that this effort to supply the trade with the best possible quality bore fruit, as shortly afterward First Quality Colors were improved to be strictly pure, using the same formula as the Guaranteed Strictly Pure Colors, and all other brands were discontinued.

In March, 1879, there was an attempt to market strictly Pure Lead Tinted. These were ten colors and the goods were guaranteed to contain nothing but Strictly Pure Lead and Oil and coloring pigments. For 18 months this met with a very cold reception and in the fall of 1880 was discontinued and the manufacture of a lead and zinc colored paint was again resumed, then under the name of Pure Colored Paint.

In December, 1878, Osborn Family Paint was made, this being the first complete line of tinted prepared paints produced. It was a very good paint, the white being equal parts of lead and zinc and the thinner, equal parts of pure boiled oil and turpentine with a small proportion of turpentine drier.

We began our own printing in 1876 in one room with two small job presses and one Globe press; shortly after another Globe press was added.

Mr. Beardslee joined the Company in 1880 and shortly after became head of the Manufacturing Department. It was under his direction that the paint and varnish production grew to its present proportions.

SWP was first produced September 30, 1880, and originally was known as "Painters Prepared Paint." A few months later, January 14, 1881, the name Sherwin-Williams Paint was first used. A study of the literature brought out at this time is particularly interesting as it represents the first high grade prepared paint ever produced, and to quote from Mr. Sherwin's Golden Jubilee Message:—

"There had come to be a well-founded prejudice against prepared paints, but the way had been opened to fill a long felt want, and gradually the larger and older manufacturers began to turn their attention to the production of paints in liquid form of reputable quality.

"With this handicap of prejudice and failure before us, we put all of our energy into experiments to see if we could make a really good paint in liquid form. I need not tell you the results. Sherwin-Williams Paint was put on the market as the best paint that had ever been made. This claim has had abundant proof for over a third of a century and today Sherwin-Williams Paints are the widest known, the best liked, and by far the most largely distributed of any in the world."

There has been a constant improvement in quality since the original manufacture of SWP and it is quite evident that the Company's policy to manufacture the best possible paint for the purpose has been a very great force in uplifting the character and quality of paint-making generally.

SWP was originally offered for practically any kind of painting but later as the uses became more specialized, other lines were produced. The first SWP color card refers to its use for floors, making special mention that several days must be allowed between coats and a week or two after the last coat for it to dry hard before the floor could be used. The public apparently were not willing to stand for this and in April, 1884, Special Floor Paint to dry over night was put on the market. Wood Stains and Paste Wood Fillers followed in 1885, and Creosote Paint was added as the most satisfactory paint for farm buildings and in 1886 Roof & Bridge Paint was first made.

The present corporation, The Sherwin-Williams Company, was incorporated July 14, 1884. In 1888 the Company acquired the controlling interest in the Calumet Paint Co. of Chicago, then manufacturing paints for the Pullman Company. Later the remaining interests were purchased. From this small beginning has grown the wonderful Chicago plant of the Company which is by far the largest and most complete paint, varnish, color and chemical plant in the world. Mr. Martin came into the organization with the Calumet Paint Co. in 1891.

In 1893 we undertook the manufacture of packing boxes in Cleveland. This feature was later extended to the other plants.

To handle the business in Canada to better advantage, a paint and varnish plant was erected in Montreal in 1895; this has since developed into The Sherwin-Williams Co. of Canada, Ltd.

To keep pace with the demand for Enamels and Paints with high gloss which were displacing the slower methods of applying color coats and subsequent varnishing, Buggy Paint and Enamel Paints were first made in 1894; Varnish Stains, 1895; and Wagon Paint in 1896. Liquid Filler was added to the list in 1896 and 1897 brought the addition of Copper Paint and Oil Stains. Porch & Deck Paints were added in 1898 and Screen Enamels in 1899.

In 1896 at the request of Lakeside Hospital in Cleveland a flat washable sanitary finish of Neutral Green color was produced for painting the rooms of the new building then being erected. This proved so satisfactory that a line of special interior colors in paste form was put on the market. This was the fore-runner of Flat-tone, introduced in 1907 and Semi-Lustre in 1925.

The manufacture of special paints for Railway and Marine uses had developed to such an extent that in 1894 a special price list was issued featuring these products, and in 1899 the first price list for Street Railway Products was issued.

All driers, Japans, and treated oils used in paints had been manufactured by the Company for many years and during later years also some varnishes were made. In 1896 this branch of the manufacture was much extended by the erection of a new and much larger plant embodying all the most modern equipment. This resulted in putting a complete line of Varnishes and Japans on the market in 1899. The leader of these was Kopal.

Following shortly after Mr. Cottingham's appointment as General Manager in 1898, began a policy of very rapid expansion to make the business complete from the manufacture of raw materials to the finished products. Many new lines were added to provide products best adapted to a wide variety of special uses.

"Expansion" was the motto and the Company pursued the ambition to really "Cover the Earth" so well illustrated in the design adopted in 1895, the inspiration of Mr. George W. Ford, then advertising manager.

In 1896 we began the manufacture of dry colors at Cleveland. A new plant was erected in 1899 and in 1903 the department was moved to Chicago to much larger quarters. Another dry color plant was established at Newark, New Jersey, in 1911.

The business in the Atlantic Coast states had grown to such an extent that it could not be well handled from Cleveland, and a new paint and varnish plant was established at Newark, New Jersey, in 1901.

In 1902 a Linseed Oil Mill was erected in Cleveland to make the oils required in our own products.

The manufacture of leaded zinc pigment was commenced in 1904 through the purchase of a mine at Magdalena, New Mexico, and in 1906 the present smelter at Coffeyville was erected.

Continuing the general policy of producing our own raw materials, a White Lead plant using the Dutch process was erected in Chicago in 1910. This supplied all the White Lead used in the manufacture of paints and put O.D.P. White Lead in Oil on the market.

The Dry Color Plant was, of course, perfectly adapted to the production of Insecticides, so the Company's entry into the Insecticide business came about quite naturally. Paris Green was the best known and most generally used Insecticide at the time. Though first made over a hundred years ago as an artist's color, it was not until 1860 that it was used as an Insecticide. We began to manufacture it in 1903 and followed shortly after with Arsenate of Lead. This was first made by Scheele, A Swedish chemist, in 1775, but was not used as an Insecticide until the Massachusetts Gipsy Moth Commission in 1892 found it was helpful in controlling the gipsy moth.

Lime-Sulfur Solution was added to the line in 1910. It is interesting to note that Sulfur was used even by the early Greeks to control insects on plants and fruit trees. Pliny mentions that it was dusted on the foliage and on the ground and was burned in the orchards. Lime and Sulfur combined as an insecticide was first used in 1845 in England. In 1915 Dry Lime Sulfur was brought out and patented by The Sherwin-Williams Company, introducing an entirely new product in the Insecticide field. In 1913 the Department of Agriculture found that the cotton boll weevil could be controlled by the use of Arsentate of Calcium and in 1918 we also took up its manufacture. Discovery of this product also is credited to Scheele in 1775.

Up to this time many other products have been added to the S-W line, the chief items being: Floorlac, Floorwax, Aluminum Paint and Machine Paint and Filler in 1901; Shellacine and Crack & Seam Filler in 1902; Commonwealth Barn Red, Enameloid, Metalistic, Marnot and Dry-O-Nite in 1903. 1904 brought the addition of Sheep Marking Liquid, Snow White Enamel, Polishol and Taxite. Flattone was included in the list in 1906 during which year Handcraft Stains, Shingle Stain and Ebonol were also added.

The manufacture of Linseed Oil Soap was first undertaken in 1908 when Flaxoap was put on the market and in 1909 Concrete Finishes were added to the list. Old Dutch Enamel under the present name was first brought out in 1910, though the same product had been made under the name Enamelastic since 1906. Commonwealth Barn Gray, Carbolicol, Brass Brite, Scarnot, and Rexpar were added to the list in 1913 and 1914.

Wishing to extend the field of supplying products through jobbers, the Detroit White Lead Works of Detroit was acquired in 1910. This company had built up a good business since its establishment in 1880.

At the outbreak of the war in 1914, consideration was given to the manufacture of aniline dyes and intermediates which were imported from Germany. The Manufacturing Committee in session during the early days of the war decided that active research should be commenced at once. Accordingly, in October, 1914, the first real work in making Beta Naphthol was undertaken. The first attempt was only partially successful, but the work was carried on with great energy and speed, much of the strength of the Company being focused on this important development. New men were brought into the organization, a great deal of money was invested in plant and the manufacture of many products established. This department has developed until the Company ranks as one of the strongest now in the field. Beta Naphthol, Para Nitraniline, Toluidine, and a great many other intermediates and dyes are being made in large quantities and comprise a large share of the production in the U. S.

Among remarkable orders received during war time were:

One from the War Department for 50,000 gallons of Airplane Varnish.

150,000 gallons of Gray Building Paint to ship to France for the American Expeditionary Force.

40,000 gallons of Freight Car Paint shipped to Russia, packed in units of three 5-gallon cans and one 2½ can, this representing the first, second, third coat and Thinner required for an individual car.

1,000,000 gallons of Oiled Clothing Varnish or "Slicker" Varnish to be shipped to the Allegator Oiled Clothing Co. of St. Louis. This order was about one-half complete when the Armistice was signed in November, 1918, at which time the order was cancelled. We immediately cancelled orders for raw materials and were allowed to make a claim on the War Department for losses sustained. Our claim was for $75,000, the China Wood Oil market dropping in a few days from 28¢ per gallon to about 15¢.

In 1917 a plant for the production of Acetic Acid was started in Chicago to make the ever increasing quantity required for dye, dry color, and insecticide manufacture. The surplus was sold direct to other consumers. This business grew so rapidly that in 1921 another plant was erected at Bound Brook.

The distillation of Coal Tar was commenced in Chicago late in 1914. This plant provided much more capacity for Xbonol and added to the list during the next year or two, Phenolene and other disinfectants, Kiltik, Roof Cement, etc.

The Advertising Department felt the need of greater uniformity in the appearance of the many lines of paints and varnishes offered to the trade, and as the result designed the present S-W products label which was adopted as the standard for all products in 1917.

A very complete plant for the production of Lithopone was erected in Chicago in 1917, thus completing facilities to manufacture the most important raw materials used in S-W products. In 1931 a large plant for manufacture of Lithopone and Zinc Sulphate was added at Coffeyville.

The capacity of the Auxiliary Departments was more than enough to supply requirements for products sold through the S-W organization and it was felt business could be expanded through acquiring other companies. Accordingly, the Martin-Senour Company of Chicago was purchased. They were established in 1878 and served a wide demand, largely through jobbers, for very high grade household and painter materials.

Again in 1920 wishing to expand still further, the Company bought the Acme White Lead & Color Works of Detroit, who did a large volume of business, chiefly industrial and auto manufacture, as well as a general trade through dealers and jobbers. This company was established in 1864.

The Pacific Coast business demanded better service than was offered from the eastern plants, so another plant was established at San Francisco. This began operating on September 26, 1919. An Insecticide plant was added in 1921.

In 1921 the manufacture of cans was discontinued at Cleveland and moved to Chicago to a new plant embodying all the latest features in automatic tin can machinery.

A new plant for the manufacture of White Lead by the Carter process was added in 1921 and shortly after included also a plant for the manufacture of Litharge and Red Lead.

In accordance with the general progressive policy of the Company, Zilo was introduced early in 1921, thus giving to the painter a lead in oil combined with zinc in such a manner as to permit him to use it in every way exactly the same as he does lead in oil.

In addition to the items mentioned which were introduced for distribution to the trade through our agents, innumerable products were manufactured for industrial consumption and for railroads and steamships. These products have kept pace with changes in the processes of painting and have frequently led in new developments. This required change from brushing material to that adapted for the many other methods introduced in modern factory practice, such as dipping, first largely used in the agricultural implement manufacture about fifty years ago; spraying first attempted on a large scale in painting the World's Fair Buildings in Chicago, 1893, and the later methods of flooding or flowing introduced about 1906 to keep up quantity production in modern automobile plants and the coating process used for painting sheet metal, etc. about 1890.

The World War brought many requests for materials for a wide variety of uses. Special camouflage colors were made for painting ships. A great many different finishes were produced for shells, varnish and other materials for airplanes. Enormous quantities were made for buildings. Finishes for motor transports were supplied to many manufacturers of trucks and automobiles.

For a number of years we had been making Pyroxylin Enamels and Lacquers in a small way and during the fall of 1921 a new department was created at Chicago to produce it in commercial quantities, thus keeping abreast of the times with the new development in these artistic and quick drying finishes. This type of finish was first made in England by Alexander Parkes in 1855, but its use had been restricted to Clear Lacquer for Brass and other metals. At the close of the World War several manufacturers found themselves with big plants and efficient organizations not occupied for the further manufacture of gun powders. They set their

chemical research departments to work to develop something for which these plants could be used. The primary raw materials used for gun powders are very similar to those used for Nitrocellulose lacquers. In a short time there was developed a pigmented lacquer suitable for finishing automobiles and many other surfaces. This was found so satisfactory that it largely displaced the former type of Oleoresinous Finishes. Up to that time it took about two weeks to finish an automobile and production lines were greatly delayed. This new lacquer made it possible to finish a car in a few hours and therefore contributed greatly to the mass production of automobiles.

This quick drying feature of lacquer attracted much attention and its use was extended into some fields for which it was not well suited. Brushing Lacquer for household use was developed but later found to be quite unsatisfactory. However, insistent demand did develop quicker drying finishes and four-hour enamels were produced which gave great satisfaction. As lacquer displaced earlier enamels it was quite natural for varnish manufacturers to do everything possible to meet this demand for quick drying varnishes. This resulted in an entirely new development in fast drying synthetic enamels which are now making very rapid progress and displacing lacquers to a large extent.

As the country recovered for the Depression of 1921 and '22 many additions were made to the line and many warehouses and stores were added and the plants were improved with considerable additional machinery.

In 1922 Mr. Cottingham resigned as President, though retaining the position as Chairman of the Board of Directors. Mr. Martin became President. We added to the line complete automobile lacquers; also Flat-Rite and Traffic Zone Paints.

In 1923, 1924, and 1925 several other new products were added, including a full line of products for Petroleum Oil producers and several Spray materials, including Free-Lulsion; also Semi-Lustre was put on the market. The name of Mill White was changed to Save-Lite.

1926 added to the list Rogers' Brushing Enamel; Enamelastic; Wall Primer & Sealer; Wood Finishes and Mulsoid Sulphate.

Mr. Penn died in 1927. Additions to the line included Fast-Dri Varnishes, and a full line of Master Painter Enamels and Undercoaters; also Wall-Tex.

In 1928 Mr. Beardslee died. New products added to the line this year included Airplane Finishes; Lyne Kote; Old Dutch Truck and Buss Enamels and Soft Paste White Lead.

To keep pace with the development in Synthetic Resins we entered into the manufacture of such resins in 1929 and produced a complete line of varnishes and enamels. This was under the name of "Kem" and included Kem Air Drying; Dem Baking Kem Transport; Kem Art Metal; Kem Bulletin, and Kem Finishes, etc.

Lowe Brothers Company who had been established in 1872 were acquired in this year of 1929. John Lucas & Company, established in 1849, also was bought in this year.

For many years research had been conducted attempting to produce dispersed or paste colors direct from dry color pulp without resorting to the process of drying out the water, breaking up the lumps into a powdered dry color and then mixing in oil or varnish. This effort finally resulted in a process in 1929 of flushing out

the water and mixing the particles with oil or varnish to a smooth paste of fine and brilliant texture. A complete line of dispersed colors and flushed inks were put on the market.

Conditions in Cuba had become unsatisfactory for our agents and in 1930 the plant and business of the Bredell Paint Company of Havana was bought and a complete line of trade and industrial products have since been made there.

Other quick drying finishes were added to the line, such as Two-Coat-A-Day Paint, Fast-Dri Enamels, etc.

In 1931 the controlling interest in the Sherwin-Williams Company of Canada was acquired, thus bringing the Canadian organization back to the U. S. Companies. Asphalt Roofing Coatings, Silver Brite Aluminum, and further Kem Finishes were added to the line.

Among other new products in 1932 were included Silver and Gold Enameloid in double compartment cans. The long established line of First Quality Colors was modified to a pouring consistency to satisfy the changing demand. Kem Railway Enamels; Satin-Glo; Seal-Rite were added, as also the Opex Color Match line and Color Match Guide.

An entirely new type of pouring can was developed in 1933 and covered by patent. Additions to the line included Metro-Namel; Tri-Seal; Dex; Opex Auto Wax and Kem Store Front Finishes.

In 1934 new additions included Trim-Brite Colors; Solfast Reds; Opex Kem Enamels; Kem Silk Screen Colors and Exolvent.

In order to consolidate the development of new products and research in every field of paint, lacquer, and color manufacture in 1935, the Allied Research Laboratory at Chicago was established as headquarters for the Institution. This included a large staff of trained chemists and many new products have been developed and many new materials have been adopted.

Extensive rebuilding was undertaken at Bound Brook and manufacture of insecticides at that point. Large addition was made to the plant at Dallas to manufacture varnishes, thus making the plant at this point quite self-contained. A plant for the development of Furniture Finishes was established at Winston-Salem, North Carolina. A new pilot plant for Synthetic Resins was established at Chicago. The manufacture of Sulphate Wood Turpentine was begun at Chicago.

In 1937 the pilot plant for Synthetic Resins was much enlarged and the manufacture of Synthetic Resins was undertaken on a much larger scale. Large additions were made to the Dry Color plant. There was added a complete line of Painter Craft Finishes; Interior Gloss Enamels; Tractor & Implement Paint and also a complete line of Pleasure Craft Finishes, and many additions to the line of Silk Screen Colors. Total tonnage during this year just closed, 1937, was 350,000 tons or 700,000,000 pounds. This included 31,500,000 gallons of paint, varnish, and lacquer products compared with 450,000 pounds or 225 tons in 1873, the first year of manufacture.