S-W ARCHIVES

#776 AUXILIARIES - LINSEED

(5 PAGES)

FOLDER

Auxiliaries

LINSEED OIL DEPARTMENT

Of today's operations of the Auxiliaries Department, the earliest record is in 1902 when the company erected a Linseed Oil Mill at the site of the present mill. The mill consisted of 12 hydraulic presses and no expellers inasmuch as at that time the expeller produced oil was considered of an inferior quality; the refining of oil was, of course, in its infancy. In fact, the principal process of refining was to leave the oil in the storage tanks until the foots had settled out and then it was filtered to remove what little foots remained. It was the boast of the Company at that time that no raw oil was shipped without being aged for three months. In an article taken from the April 1902 Chameleon the statement is made that "the purity and usefulness of Linseed Oil is largely depended upon the way it is aged".

In spite of this statement, however, sometime between 1902 and 1906 nine expellers were installed at the mill, but were kept in operation only a short time when they were removed and set up in Montreal to produce oil for the Sherwin-Williams Company of Canada. By 1926 the mill had been increased from 12 presses to 24 and its capacity for producing oil increased from 225 tankcars per years to 450 tankcars per year, and 16,000 tons of Linseed Cake annually to 32,000 tons. Producing Linseed Oil by the hydraulic process yields an oil of excellent quality, but the cost of producing it is prohibitive due to the number of men required to operate the cookers, presses, trimmers, etc. For this reason the six expellers presently operating in the Oil Mill were installed in 1935-36. The man hours required per unit of production decreased materially through the use of the expellers. Although the quality of raw oil produced is inferior to that of the hydraulics, the yield is approximately the same.

Until the beginning of World War II there was two main sources from which the company obtained their flaxseed used in producing Linseed Oil; one being the northwestern central states such as Minnesota and the Dakotas and the other being Argentina. The Oil Mill received flaxseed from the northwestern states via boat and from the Argentina through the St. Lawrence River, although the first shipments from the Argentina were unloaded on the east coast and forwarded here by rail. At the advent of World War II the Argentina was lost to us as a source of flaxseed and, therefore, more acreage was sown to flaxseed in American with the result that at present the entire production of Linseed Oil in this country is from American grown flax.

During the second quarter of the 20th century a process was developed in Germany through which the oil remaining in the linseed cake after pressing was removed through solution of the oil in solvent and then evaporating away the solvent leaving pure oil. Two processes were developed in this country called French's Process and the Anderson Process for solvent extraction of Linseed Oil. In 1948 patents were issued to The Sherwin-Williams Company on an original process for solvent extraction which did not require the use of pre-pressing of flaxseed before solvent extraction. In 1948 the present Solvent Extraction Plant at the Linseed Oil Mill was put in operation. This plant can extract oil from the meal so that the residual oil left is below 1%, whereas meal from the expeller and hydraulic processes runs from 5½% to 6½% oil.

In 1948 a disastrous fire occurred in the hydraulics at the Oil Mill which put them completely out of operation. Currently the Company is operating only the Expeller and Solvent Extraction Plants, with a production of around 450 tankcars per year of which 70 are sold to the trade and 380 are consumed institutionally. This represents approximately one-half of the annual requirements of the Company's linseed oil. Along with the production of the 450 tankcars of oil, the mill produces 25,000 tons of meal annually, all of which is sold for animal feed.

Also, at the Oil Mill raw oil is converted into Alkali Refined Oil or (44) and into various bodied oils and litho varnish. This processing of the oil is done in the Oil Refinery. At the present time none of the raw oil or (2) used in the Company's paint factories is made at the Linseed Oil Mill, or of the raw oil produced at the mill and being converted to refined oils.

For years the paint industry had consumed great quantities of Tung Oil, all of which was imported from China, but after Japan had invaded China in the late '30's this source was reduced and the Company began at once developing a substitute which it found in dehydrated Castor Oil or Dehydrol. In 1937 the Dehydrol Department at the Oil Mill was put in operation and it furnishes all of the dehydrated Castor Oil consumed by the Company. The department has a capacity of 300 tanks of Dehydrol per year, of which the Company consumes approximately 140 tanks and sells to the trade about 10 tanks or approximately one-half of the capacity of the department, which is borne out by the fact that for the past year we have run only one of the production units.

Recently a new type of Dehydrol of a lighter viscosity was brought out by the Auxiliaries Vegetable Products Research Laboratory in answer to a constant demand for this type oil from the Sales Department and it is expected that the annual production of Dehydrol will again approximate its capacity.

AUXILIARIES DEPARTMENT

The Auxiliaries Department of The Sherwin-Williams Company was created as such about 1905 when the operations at the Linseed Oil Mill and at the Ozark Smelting & Mining Company at Coffeyville, Kansas were combined under one manager of which Mr. George A. Martin, later President and Chairman of the Board of the Company, was in charge.

In 1910 the White Lead Plant at Chicago was put in operation under the Auxiliaries Department. In 1917 production of Lithopone at Chicago was inaugurated, also, under this department. In 1916 Mr. Martin was made Vice President and General Manager of the Sherwin-Williams Company and Mr. H. J. Hain, who has been General Superintendent of Paint Manufacturing, was made Manager of the Auxiliaries Department. Mr. Hain continued as General Manager of the department until 1931 when he was made Vice President of the Sherwin-Williams Company and Managing Director of Auxiliaries Department. Mr. Hain continued in this position until his retirement in 1945. Shortly after Mr. Hain's retirement Mr. S. B. Coolidge, Jr., was elected Vice President and director of Auxiliaries

TIN CANS

The Manufacture of Tin Cans by the Company was initiated in 1874 in Cleveland where cans were made by hand by tinsmiths at the rate of 1500 cans per day. Slowly the manufacture of cans grew through the installation of semi-automatic and finally automatic machinery until the yearly production of cans in the Company has increased from 450,000 to 150,000,000.

In 1921 a new Tin Can Plant at Chicago was opened and production of cans at Cleveland was abandoned. In April 1921 issue of the Chameleon it was stated that "the new Can Plant at Chicago is a decided departure from the old can department at Cleveland and the smaller one at Chicago. A new building has been erected and modern high grade equipment has been installed. The equipment for making the standard round cans from quarter-pint through one-gallon sizesis completely automatic; the equipment for making miscellaneous or odd size round cans, and also that for making small square cans, is semi-automatic. The plant accommodates a nine line can layout producing 30,000,000 or more cans per year."

In March of this year the Company announced that it is erecting a new can plant at Hubbard, Ohio which will have a capacity of around70,000,000 cans per year, with sufficient space for additional productive equipment.

Around 1947 the Tin Can Plant put into operation a Lithographing Plant which now consists of two plate coating lines and three printing presses. More and more of Sherwin-Williams' products in cans are being put into lithographed packages all the time. This, of course, has increased greatly the number of people working at the Can Plant, as well as affording a much more attractive looking package in which to offer the Company's products.

ZINC AND LEAD PIGMENTS AND CHEMICALS

In 1904 The Sherwin-Williams Company purchased the Ozark Zinc Oxide Company at Joplin, Missouri. Due to the fact that most Zinc Oxide at that time was manufactured from Zinc Sulphide ore rather than Zinc Carbonate ore, it was necessary to roast the ore to remove the sulphur before combining it with lead ore to form Leaded Zinc Oxide. Roasting ore requires a large amount of fuel and to secure a cheap fuel the Company decided to move the Ozark Zinc Oxide Plant from Joplin, Missouri to Coffeyville, Kansas where there was an abundance of natural gas at very low cost.

In 1906 production was started in one small zinc oxide furnace at Coffeyville which was known as The Ozark Smelting & Mining Company. Today the plant covers 80 acres and produces Leaded Zinc Oxide on four large furnaces, Lithopone, Zinc Sulphate and Cadmium Metal.

For sometime the Company operated mines at the Magdalena range of New Mexico, producing both zinc sulphide and Zinc carbonate ores for use at Coffeyville and, also, mining lead carbonate for the production of Pig Lead. In 1945 the operation of these mines were closed down and the property was subsequently sold. At the present time all of our lead and zinc ores are purchased and the Company is not engaged in any mining operations.

As the lead and zinc ores come from the mines they are crushed and then concentrated either by oil flotation on shaking tables or by electro static esparation. This removes a large portion of the dirt and foreign matter from the ores and, of course, provides considerable saving in freight and in operating costs. The Zinc Sulphide ores are roasted in kilns which removes the sulphur from the Zinc Sulphide leaving the zinc in form of Zinc Oxide. The Lead Sulphide ores are not roasted inasmuch as the sulphur content is required for conversion to Lead Sulphate when they are blended in the furnaces with the Zinc Oxide. In addition to the Zinc oxide and lead ore in the Leaded Zinc furnaces, each charge is composed of chatts, coal and flux. These materials are mixed and blended with great care so the resultant Leaded Zinc Oxide is of the proper opacity, color and so the chemical constituents are in the proper ratio. The Leaded Zinc Oxide is fumed off from the furnaces and carried by enormous fans along a huge pipe to tubular coolers. These coolers allow sufficient heat to escape from the pigment so that it can be safely blown into the bag room and caught there in cotton bags standing upright over hoppers. The pigment is retained in the cotton bags inside the bags and in the hoppers while the furnace gases conveying the pigment escape through the meshes of the cloth. At regular intervals the bags are shaken causing the pigment to fall down into the hoppers and are emptied into paper bags for shipment to the paint factories.

Leaded Zinc Oxide is produced in four different grades - #511 which is composed of 50% basic Lead Sulphate and 50% Zinc Oxide; #412 composed of 35% basic Lead Sulphate and 65% Zinc Oxide; #1411 consisting of 25% Lead Sulphate and 75% Zinc Oxide and #1424 Which is composed of 12% Lead Sulphate and 88% Zinc Oxide.

In 1917 the production of Lithopone was inaugurated at the Chicago Plant. In the manufacture of Lithopone, a solution of Zinc Sulphate and Barium Sulphide are run together into a large striking tank wherein a chemical double decomposition takes place and an intimately mixed precipitation of Barium Sulphate and Barium Sulphide is deposited. After the precipitation is complete the slurry is then filter pressed, washed and the filter pressed cake is then calcined, ground, screened and packed. Operations continued at Chicago until the year of 1939 when it was discontinued. In the meantime, however, a Lithopone Plant had been built and put in operation at Coffeyville in 1931. The demand in 1938 for the pigment was such that the capacity at Coffeyville was doubled. At present the capacity of the Coffeyville Plant is 27,000 tons annually, of which 9500T is consumed by the institution and 5500T is sold to the trade, leaving an unused capacity of 12,000 tons per year.

In 1910 a small plant was put in operation at Chicago for the production of Basic Carbonate of White Lead. This plant operated until 1947 when the production was discontinued. In conjunction with the production of White Lead the Company, also, produced Litharge and Red Lead.

The manufacture of Zinc Sulphate at Coffeyville got underway in 1937 with a capacity of . The entire Zinc Sulphate production was crystalized and sold as one mole Zinc Sulphate. Later the manufacture of Zinc Sulphide was discontinued and Lithopone was made with Zinc Sulphate as a crude material instead of Zinc Sulphide. In the later 1940's a spray dried was installed at the Zinc Sulphate Department producing a fine granular Zinc Sulphate which is much more acceptable to the trade generally the akilm dried material. At the present time the capacity of the Zinc Sulphate Plant is 19,000 tons of 100% Zinc Sulphate per year, of which 6500 tons are consumed by Sherwin-Williams for the production of Lithopone and around 2500 tons are sold to the trade.

The refining of crude Wood Sulphate Turpentine at the Chicago Plant was put in operation in 1936. At present the consumption of Turpentine by the Sherwin-Williams Company is practically nil and the operation of the plant is, therefore, limited to the trade sales of Turpentine which amounts to approximately 700,000 gallons annually. The plant can produce at the rate of 1,650,000 gallons.