The Chameleon

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Enthusiasm

By Walter H. Cottingham

HUMAN nature may be divided into two great classes, those who are enthusiastic in their dispositions and those of a pessimistic nature. There are so many advantages in enthusiasm, the great wonder is that there are so many pessimists in the world.

To be enthusiastic is to be hopeful, to be cheerful, to be confident. To be pessimistic is to see things through dark spectacles, to declaim against fate and to expect disaster.

At the root of enthusiasm you will find faith in mankind, faith in the world and faith in yourself. The enthusiastic man is thankful that he is alive. He finds the world a fine place to live in. He believes he has been sent into it for a purpose, and is determined to make the most of its vast opportunities.

And the poor pessimist, he is disgruntled, nothing suits him. People and things bore him, and he trusts nobody, not even himself. He is out of step with progress, and altogether he is a very miserable spectacle.

Enthusiasm can be cultivated. Nature intended us to be enthusiastic, for surely man's position in the world as the greatest and most marvelous of God's creatures is in itself an inspiring thing. Think of it! Man has within him the power and capacity to command and enjoy all the marvelous things the world contains. They have been created for his use and enjoyment. He is invited to partake of them. It is surely a grand thing to be born into such a world. It is surely a marvelous chance that is afforded us. We are brought into this vast field of opportunity with body and mind capable of the highest development. We have the means within ourselves to make of ourselves almost anything we want to be. What a chance and what a responsibility.

No man should ask for, or expect, more than a fair chance to show what he can do. The man who is born into the world with a position made for him, is handicapped as compared with the man who has nothing but his God-given talents to depend upon. That position and success which we gain by our own hard efforts is ten times as sweet and ten times as creditable as the highest position in the land inherited.

The young man who inherits wealth and position is without the greatest incentives to effort and development — want and poverty. Envy him not. The temptations of the well-to-do are greater than those of small means. It requires great self-denial

(Continued on page five)

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The Manufacture of Zinc Oxide

By H. W. Curry, Chief Chemist, Coffeyville

COMMERCIALLY, Zinc Oxide or Zinc White, is manufactured by two processes which may be termed direct and indirect. The indirect process, which has been in common use in Europe, since the middle of the eighteenth century, consists in heating retorts containing molten zinc or spelter. The metal passes into the form of a vapor which is oxidized by a current of air in an adjoining chamber of zinc oxide which is in turn carried by the draught from a high chimney to collecting chambers. The oxide then undergoes a finishing treatment to rid it of impurities which naturally distill over with it. Traces of arsenic, cadmium and lead if present in the metal will be found in the oxide.

The color of the oxide if properly made is a pure and brilliant white and absolutely permanent. It is yellow when heated, but upon cooling returns to its original white color. It is obvious that, in order to produce a pure grade of zinc oxide, a pure zinc metal must be used at the initial stage of the process. A zinc oxide produced from the distillation of electrolytic spelter would, in my opinion, be the purest of all zinc oxides

The chief objection to the indirect method, and the reason that it has never met with favor in this country is apparent when costs are considered. The metal used in the process must first be extracted from zinc ores which is quite a process in itself.

The direct process for manufacturing zinc oxide, known as the Wetherill process, and in which the oxide is made directly from the ore, sprang into use soon after the famous zinc mines at Franklin, N. J. were opened. Col. Samuel Wetherill was the first to manufacture zinc oxide on a commercial scale, in 1855. Although many improvements have been made since, the process today is essentially the same.

Since that date, however, an abundance of zinc, lead and leaded zinc ores have been produced by mines throughout the United States. The Missouri-Kansas-Oklahoma district produces more zinc and lead ores at the present time than any other district in the world. However, owing to the great ease with which ores from this district are concentrated, the high grade concentrates produced therefrom command a price, which is, in normal times, prohibitive to the manufacturers of zinc oxide, and consequently these concentrates are used by the manufacturers of spelter. The lower grade disseminated ores of the Western States and New Mexico are the chief ores used in the manufacture of zinc oxide in the middle west. These should contain at least 30 percent combined zinc and lead, and should be free from arsenic, cadmium, antimony, bismuth and any other objectionable elements which might find their way later into the pigment and discolor or otherwise injure its quality. These ores are quite variable in composition, but may be carefully blended so as to insure a resultant pigment of the finest quality and of almost any composition desired, whether it be a zinc oxide or a leaded zinc pigment.

As may be inferred from the above, the Wetherill process may be applied to the manufacture of either zinc oxide or leaded zinc pigment, the only differences being in the selection and blending of the ores to meet the requirements of the resultant pigment. The ore is usually shipped in open-top or coal cars and upon its arrival at the smelter is sampled by an automatic sampler and crushed to a fineness such that the largest piece is only $\frac{5}{16}$ in. in diameter. The crushed ore is conveyed by an elevator to the top of the crusher where, by means of chutes and small cars on narrow gauge tracks, it is put in bins of about 50 tons capacity, and at all times the chemical analysis of the ores in the different bins is known. These ores may be either a carbonate, silicate or sulfide. The first two mentioned ores are now ready for use, but the sulfide ores must be roasted to eliminate their original sulphur content, and in so doing, the ore is rendered fit for furnace operations, since by this treatment it has become oxidized and made more reducible.

Various types of roasters may be used. (Where the sulfur from the ore is utilized in the manufacture of sulfuric acid, the Hegeler or Hasenclever muffle furnaces are used.) Splendid success has been met with in the use of a Cappeau Kiln which is a modified form of the Ropp Straight-Line Furnace. This is a reverberatory kiln about 150 feet long and 14 feet wide, equipped with two stirring ploughs or rabbles and fired with four stokers which consume 12 tons of coal per day. It is capable of roasting 38 tons of leaded zinc ore every twenty-four hours. Only enough sulfur is left in the ore to combine with the lead in the formation of lead sulphate. The roasted ores are graded and placed in different bins according to their sulfur and metallic contents. The zinc in the ore is now in the form of zinc oxide and the Lead as lead sulphate. The ore is now ready for the pigment furnaces.

At the Coffeyville Oxide Works of The Ozark Smelting and Mining Company there are three blocks of furnaces. A block consists of 16 furnaces built of fire brick with a combustion chamber in the center, making 8 furnaces on each side of the combustion chamber, a long arched roof covering the entire block.

(Continued on page fourteen)

Credit Department Installed at Minneapolis

A. R. Gilmore

Announcement is made of the installation at Minneapolis of a complete Credit and Accounting Department with Mr. A. R. Gilmore as credit manager.

Mr. Gilmore's experience in the Company's service has been confined entirely to work in the Credit and Accounting end of the business, which qualifies him for the responsibilities he is now taking up.

Entering the service of the Sherwin-Williams Co., at Waco, Texas as cashier in the Retail Store, Mr. Gilmore was later transferred to Cleveland as assistant to Mr. Campbell and about a year ago he went to Chicago as assistant to Mr. Sawyer, where his part of the work was in the handling of Minneapolis credits and accounts, and the work therefore, is not new to him as he takes up his duties as credit manager at Minneapolis.

W. W. Hoehn is appointed cashier and will work with Mr. Gilmore in giving service and splendid co-operation on all accounting and credit matters.

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The Manufacture of Zinc Oxide

(*Continued from page two*)

The roasted ore is mixed with coal (the particles being about one-quarter in. diam.) in the proportion of about one ton of ore to one ton of coal and a slightly greater quantity of silicious material for anti-flux (the particles being approximately one-half in. diam.) also a quantity of water is added and the whole thoroughly mixed. Two automatic mixers are sufficient for the three blocks. This mixture is put in bins by the furnaces and charged into the furnaces as needed.

The grates are first covered with a thin layer of semi-anthracite coal which immediately ignites from the furnace heat of the previous charge. In a few minutes about 3600 pounds of the mixture of coal, ore and fluxing material are charged into the furnace, one-half on each side of the furnace. A certain amount of blast is turned on at the start and increased as it is found necessary. About four hours are required to burn out the charge which is occasionally raked.

The coal serves a double purpose, that of furnishing the necessary heat and also as the principal reducing agent. As the charge burns, carbon monoxide (evolved from the coal) reduces the zinc and lead in the ore to a metallic state from which condition they almost instantly vaporize. The zinc vapor is immediately oxidized by the carbon dioxide and air present in the furnaces to zinc oxide and the lead vapor to lead oxide which, in turn, combines with sufficient sulfur trioxide to form lead sulphate. Thus we see how the zinc and lead in the form of pure compounds are separated from the rest of the charge which constitutes the slag or cinder.

The fume, consisting of solid particles of zinc oxide and lead sulphate so finely divided and intimately mixed that they practically form a compound together with the gases from the combustion of the coal and other impurities, is drawn off of the furnaces by large suction fans. It, of course, first passes through the combustion chamber where particles of carbon and other impurities are burned out and then it is carried on through a sheet iron pipe line which is about 6 feet in diam. and about 700 feet long and which serves to cool the fume and also to collect any impure or discolored pigment settling out along the way. The pipe line is equipped with cleanout doors at regular intervals and the impure pigment taken from it is returned to the mixers where it is mixed with the charge and reburned.

The slag or residue remaining upon the grate after the metal has been volatilized and drawn off, is taken from the furnaces to a crusher where it is reduced in size and loaded into cars for use by the railroads as ballast.

By the time the fume reaches the end of the pipe line leading to the bag room, it has cooled considerably and it is discharged by the fan into a hopper line in this room. The bag room is in a very large, well ventilated brick building, its dimensions being about 100 feet, by 150 feet, by 86 feet. The hopper line extends entirely around the room and then branches out into a large number of rows. Muslin bags 30 feet in length are suspended from a runway above and fit over the openings in the hoppers. When under pressure, these bags are about 23 in. diam.

The pigment or fume, under pressure from the discharge fan, passes through the system of hopper lines up into these bags which stop the solid particles but allow the gases from the combustion to escape through the pores of the bags. The bags are frequently shaken and the pigment removed from the hoppers daily. By means of trucks it is conveyed to the packer where it is usually packed in barrels of 350 pounds each, or in paper bags which hold 75 pounds. The daily output of this plant is 36 tons.

For the past seven years, however, most of the pigment produced here has been subjected to an additional refining process. The idea being to eliminate any remaining impurities. The barrels and bags containing the pigment are now weighed and properly stenciled ready for shipment to the trade or stored in a large warehouse.

The production of zinc oxide in the United States increased from 10,000 tons in 1880 to 72,000 tons in 1907 and since that time there has doubtless been an enormous increase. According to C. D Holley, 61 analysis of the leading brands of mixed paints sold in this country showed an average ratio of lead pigments to zinc oxide of 45.55. Considering the comparatively short period of years during which zinc oxide has been manufactured in this country, as well as its steady increase in consumption, it is very apparent that paint manufacturers recognize its value as a pigment. Zinc oxide forms a considerable percent of the composition of high grade rubber goods, giving them resiliency and durability. Also it is used in the production of linoleum, and for many other purposes. As a pigment, it has not the covering power of white lead but has the double advantage of being non-poisonous and of not becoming discolored by hydrogen sulfide. Zinc oxide mixed with chloride form oxychlorides which are used by dentists for filling teeth.

Most of the paints made today contain in part zinc oxide and leaded zinc pigments. A pigment containing about 65 percent zinc oxide and 35 percent lead sulphate is an ideal one for paints providing toughness, luster and constancy of color, qualities which are essential in this age of conservation. The leaded zinc pigment seems to embody only the finest qualities of other individual pigments. In making up a batch of paint it is necessary for zinc oxide to be mechanically mixed with the proper proportions of lead sulphate or carbonate of lead (white lead) while the leaded zinc pigment, as made here, is all ready for use, and one could not hope to obtain a more intimate mixture of the particles of zinc oxide and lead sulphate.

Notes from Our Chicago Correspondent

The salubrious Chicago climate is popular these days with some Clevelanders. We had with us recently a Mr. Whittlesey, who is said to hold a lucrative situation down there.

Other visitors were old Doc Holton, of Dry Lime Sulfur fame, Freddie Meyers, the genial paint man, Geo. Minnich, who says he traveled 28,000 miles in the last two weeks, or some such figure; Young Jimmie Hasson, of New York and Cleveland; Art Steudel, who can pronounce such words as paraphenylenediamine, and others.

The dapper Clarence Bull was also in our midst. Clarence says his ambition is to wear a flannel shirt to work, with no necktie. My goodness, Clarence!

It was necessary to have a guide last Monday morning to show folks their desks in the office. The departments are now seg-re-gat-ed. Many cases of wry neck are being cured.

Speaking of such things, John Barden has contracted tor-ti-col-lis in a mild form. Some say it is from looking back to see what is approaching. John has a new horseless carriage. He was late to business last Tuesady. He tried to push over the garage. but could not do it

Stork Feathers

Mr. and Mrs. Elmer A. Ruland announce the arrival of an eight and a half pound boy on June 11th. The newcomer's name is Robert Russell. Mr. Ruland is our Omaha representative. Congratulations, Mr. and Mrs. Ruland.

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