

ore bed of furnace
Coffeyville, Kansas Smelter.

Photo taken 1934

Reel Print #P-1475

File under White Lead

Coffeyville Smelter
ore bed. Furnace



WL-17

REPORT ON ORR'S PATENT WHITE LEAD PROCESS.

ORR'S PATENT WHITE LEAD PROCESS CONSISTS OF:-

- 1st. The manufacture of Oxide or Massicot in the usual way.
- 2nd. Grinding and Levigating the Oxide.
- 3rd. The fine Oxide is charged into Carbonators with water at about 75 degs. cent. to which is added a very small proportion of Acetic Acid which gradually converts the Oxide into Acetate and simultaneously whilst the charge is kept in agitation Carbonic Acid Gas (CO_2) is injected, converting the acetate into basic Carbonate of Lead, the whole operation taking about 3 1/2 hours to complete. The charge is then run off into a tank and a small quantity of carbonate of soda is added to neutralize any trace of acetate of Lead remaining unconverted. The material is then run into a washing vat with fresh water to wash out the acetate of soda and passed into filter presses. The cakes of white lead in solid form are taken out and passed into the drying stores. The whole process from Blue Lead to finished market White Lead in cakes being completed in less than 4 days. The plant works automatically and almost entirely without handling the product, which under the old 'Dutch' process is fraught with dangerous consequences to the health of the workmen.

The process costs, including the conversion into cakes, ^{skittings} fully 45% per ton less than the 'Dutch' process, and the full equivalent gain in weight is obtained. The important advantage in the enormous saving of time and heavy dead stock of Lead in process and risks of a falling market can only be appreciated by those who have had practical experience in the

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ducing White Lead by the Old Methods:

The cost of a plant capable of producing say 100 tons a week or 5,000 tons per annum would not exceed \$10,000.

This process follows precisely the same principles of conversion as the 'Dutch,' and may be briefly described as a rapid Dutch process. The product is chemically, analytically, and physically similar. Summarizing the two processes: The 'Dutch' starts with Blue Lead, which is put into the stacks in heights or sections with beds of Spent Tan Bark and pots of dilute Acetic Acid. The heat from the moist Bark vaporizes the acid which gradually corrodes the surface of the Lead Plates (Wickets) in layers, which is again reacted upon by the free Carbonic Acid resulting from the fermentation and converted into Basic Carbonate of Lead, and this action and reaction is repeated penetrating to the internal surface of the Blue Lead a portion of which is usually left uncorroded. The reactions are more or less irregular and uncertain.

The Orr process converts Blue Lead into Oxide, then into Acetate, which is decomposed into Basic Carbonate of Lead. From start to finish the process is under absolute and complete control and the resulting product can be relied upon to come out of uniform good quality without any of the risks and irregularities of the Dutch process.

In conclusion I beg to point out that this report and the figures and facts arrived at are not BASED upon mere laboratory or experimental apparatus but upon the inspection of both processes upon a commercial scale, which the author has personally inspected and examined in practice.

O.E. BAINBRIDGE, M.I.C.E., F.R.S.E.

0007-SWP-043422

REPORT ON ORR'S PATENT WHITE LEAD PROCESS.

32 Victoria Street, Westminster,
London, S.W., January 16th, 1904.

Gentlemen,

As requested, I have pleasure in giving herewith information as to working and costs of the "Orr" Process of White Lead Making. This process, which is based upon the "Ditch," or "Stack," method, is an accelerated corrosion process, possessing the important advantage over the Dutch method of being under complete control in all its stages. This ensures great regularity in the composition and the qualities of the product, which is similar and equal in all respects to the best qualities produced by the Dutch method.

The working of the process is as follows: The metallic lead is first oxidized. The oxide, with the addition of water and a very small proportion of acetic acid, is agitated in a special apparatus or "Carbonator," into which is pumped simultaneously the carbonic acid gas from a lime kiln or other suitable source. In the course of from 12 to 24 hours the charge is converted into a basic carbonate of lead, and is then discharged into a receiving tank, where the small quantity of lead acetate remaining in the charge is neutralized.

The white lead is then agitated with fresh water in a washing tank and pumped into filter presses, after which it is dried in a specially constructed stove combining rapid drying and an absence of handling, ground, and packed for the market.

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The entire process, from the time work is commenced on the blue lead to the time when the dry white lead is casked and warehoused ready for consumers, occupies less than five days.

The results obtained in actual work upon a commercial scale show that, in combination with the ordinary oxide process, a saving of at least \$2 5s. per ton will be effected.

The cost of plant to produce 5,000 tons per annum, working day and night, would be about \$10,000.

I also submit herewith analysis of various English Stack-made White Leads and of White Lead produced by Orr's process:-

The best quality of Stack-made White Lead answers the formula.

2 Pb.Co₃ Pb. H₂O, Carbonate of Lead
Hydrated Oxide of Lead

English Stack-made

Carbonate of Lead
Hydrated Oxide of Lead

II } Mackay Parker & Co
III }

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REPORT ON ORR'S PATENT WHITE LEAD PROCESS.

Certificate of Mr. W. W. PROCTOR, Newcastle-on-Tyne.

I hereby certify that I have examined the undermentioned samples of Genuine Dry White Lead, and that I find the following results:-

Samples Marked	Newcastle W.P. & Co.	Chester W.P. & Co.	Monk S.A. Hall
Oxide of Lead	85.751	84.794	85.531
Carbonic Acid	12.110	13.857	12.065
Combined Water	1.959	1.548	1.578
Moisture	.088	.078	.088
Residues and Loss	.084	.120	.084
Specific Gravity	99.989	100.004	99.915
at 60°	6.503	6.485	6.541

(Signed) W. W. Proctor

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REPORT ON ORR'S PATENT WHITE LEAD PROCESE.

Laboratory and Assay Office,
75, The Side, Newcastle-on-Tyne,
February 17th, 1894.

We hereby certify that we have analysed the under-
mentioned samples of Dry White Lead, and that we find the
following results:-

Sample Marked.	Carbonate of Lead	Hydrate of Lead	Moisture	Spec. Grav.
No.1 Orr's Process	70.27%	29.27%	0.20%	8.89
No.2 Walkers, Parker & Co.	73.55%	26.30%	0.10%	8.88
No.3 Cookson & Co.	71.97%	27.87%	0.12%	8.88
No.4 Foster, Blackett & Wilson	68.88%	30.15%	0.15%	8.88
No.5. Locke, Blackett & Co.	74.88%	24.55%	0.15%	8.88

J. & H. S. PATTERSON

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S.W. Pigment Plant - Ogle
Photo rec'd 11/9/58.

used in B-592 - The Drumthorpe
Hua Paint Book - Page 8

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Bottom Illustration

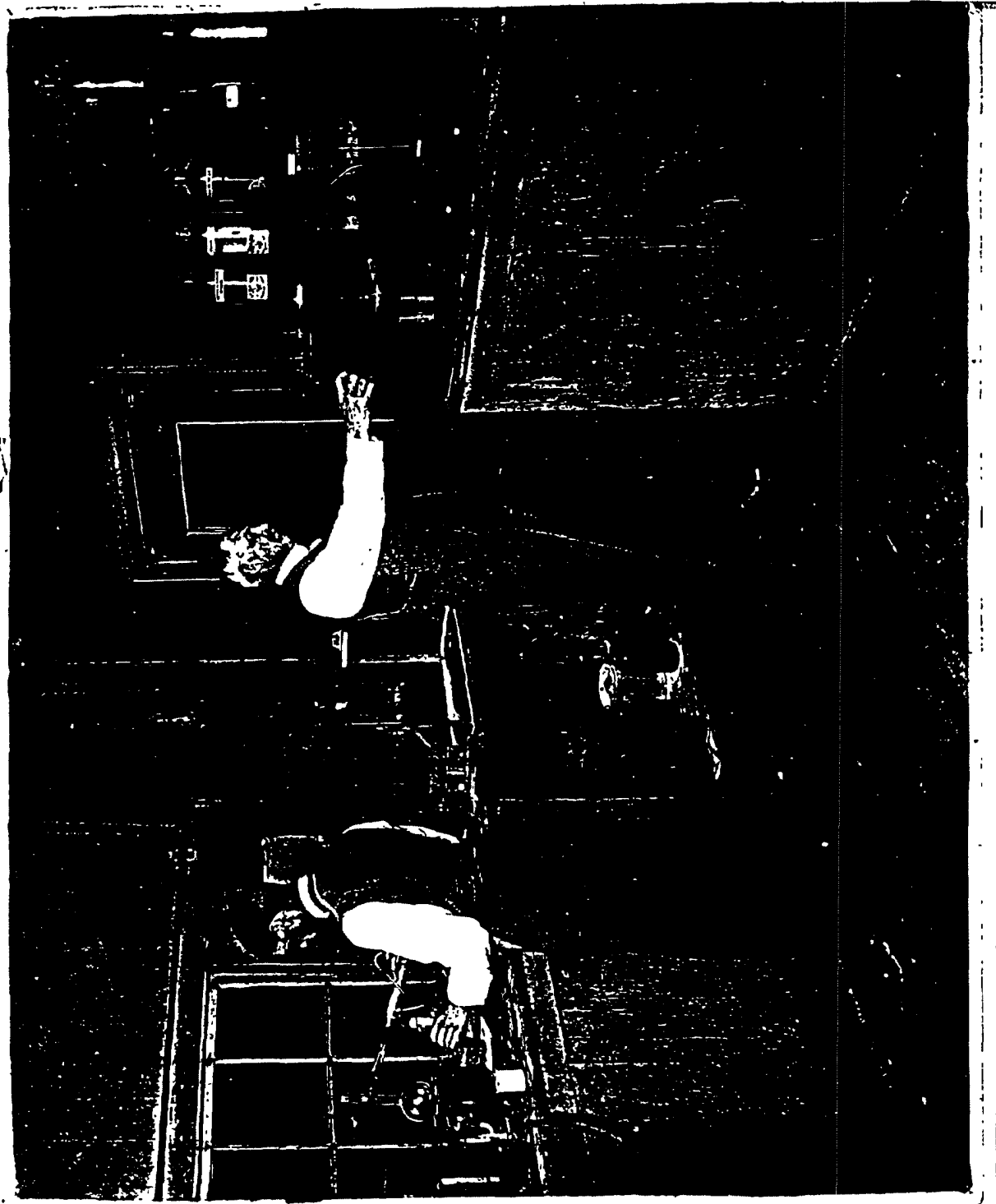
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Caption S.W. Pigment Plant - Ogle

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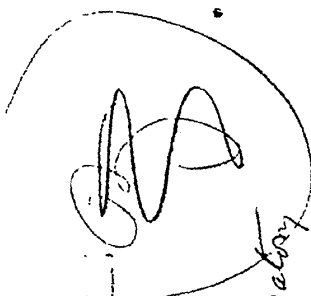
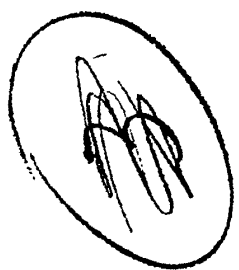
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MONTREAL OFFICE
SOUTH BRANCH

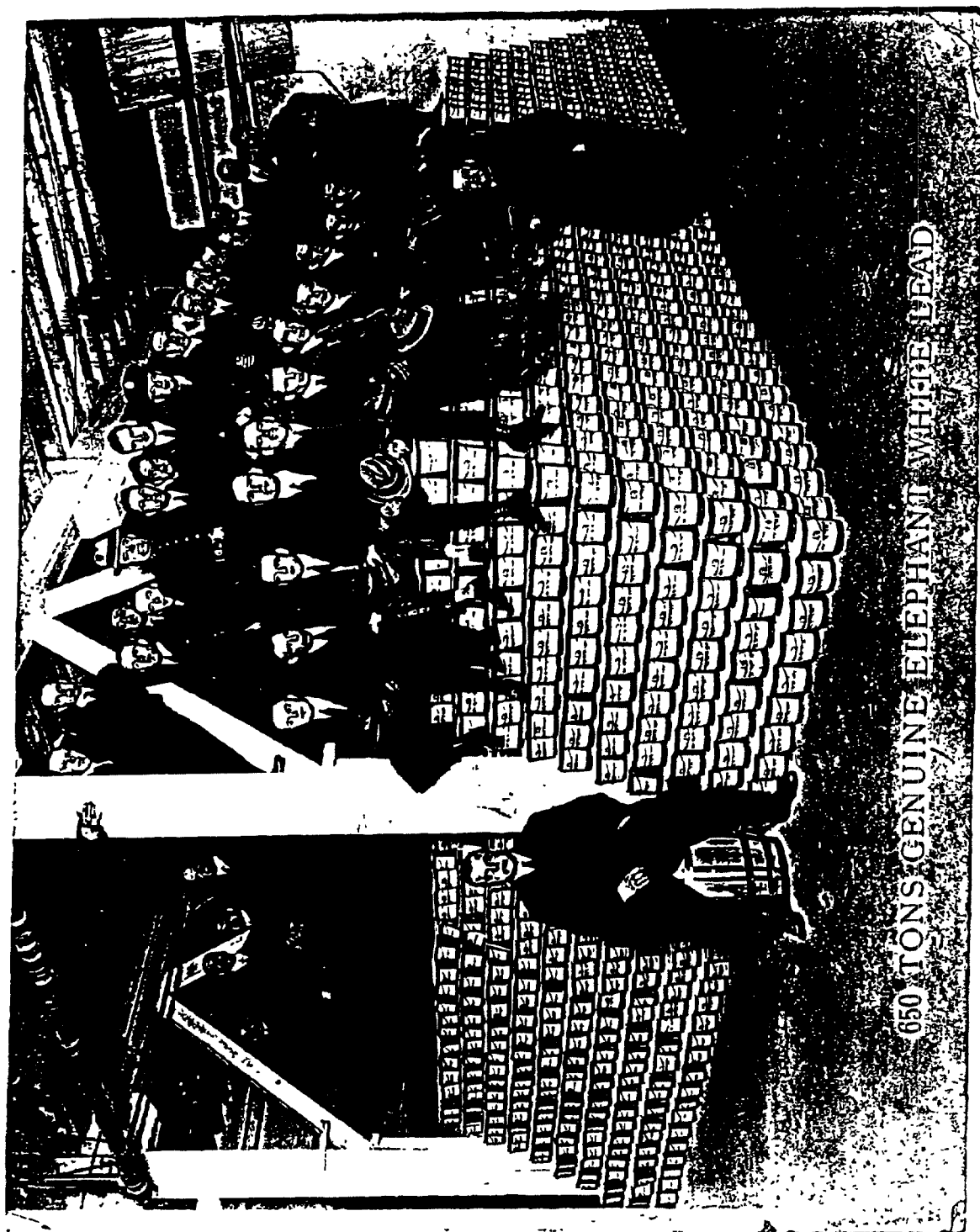
~~Whitehead~~
a. of Laborator
Whitehead WPO



Elephant White Cad Laboratory
and Testing Room

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650 TONS GENUINE ELEPHANT WHITE LEAD

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