

Average
Costs

B No.	NAME	1914										1915					
		TUES	W	TH	F	S	10	5 P.C.	10 P.C.	15%	25	1905	% Bk.	Bk.			
485		7853	7677	7869		6669				9015							
		8144	7701	7836		6675				8906							
486		11525	10863	9781		9167				11870							
		7095	6501	6500		6166											
		7830	6887	6532		6061				8098							
497		9640	8189	8676		8081				10789							
		5916	5642	5386		4986											
		6138	5785	5430		4947											
499		8171	7718	7827		6612											
		7105	6831	6545		6115											
		7899	6956	6571		6130				8161							
		9721	7875	8788		8178				10881							
	General Average	8195	8046	7975		7764											
		10787	10728	10603		10379											
	Sales	108103	74358	78817		91049											
350		9842	8968	8653		8302				11803	10000						
		9495	8103	8787		8326				11907	10007						
362		13666	13303	11716		11101				15876	13809						
		7504	7300	6914		6516				8566							
		7698	7052	6935		6534				8575							
370		10309	985	9913		8699				11407							
		5478	4806	4888		4488											
		5606	4395	4008		4667											
371		7510	7067	6571		5956											
		7033	6761	6465		6045											
		7053	6710	6345		5884											
379		9404	8747	8460		7845											
		15135	10548	10002													
450		17096	16731	16309													
		6381	6007	5641		5292											
		6389	6046	5681		5310											
433		8518	8061	7575		6987											
		12220	11946	11630		11250											
475		16240	15928	15507		14973											
		8646	8373	8086		7656											
		8906	8464	8098		7687											
		11870	11236	10797		11150											

B No.	NAME	Tons	4	5	10	5 P.C.	10 P.C.	15%	25	1000	% Brk.	Brk.
371		85.32	80.78	77.62	78.12			94.18				69.71
		85.32	81.91	78.26	78.65			93.96				69.24
372		118.79	109.81	104.35	98.80			180.28				92.82
		60.47	57.78	55.47	52.07			71.07				
		62.19	58.76	55.11	52.54			70.81				
373		82.98	76.01	70.48	66.73			92.41				
		92.63	90.89	87.73	85.73							
		97.02	93.69	89.94	85.30							50.98
375		124.86	116.78	110.98	113.77							107.39
		85.35	83.62	82.26	78.44			95.96				75.97
		89.30	80.37	80.22	77.61			97.98				75.37
378		119.07	114.49	109.65	100.48			130.54				100.23
				101.90								
380				106.27								
				79.68	75.68							71.66
382				106.26	100.91							100.00
		70.22	67.48	64.52	60.32			80.12				57.80
		69.90	66.47	62.52	57.81			52.20				50.77
		90.20	86.65	80.74	77.61			71.78				74.56
384												
386		76.89	70.05	70.09	66.09			86.89				63.98
		90.80	86.90	78.25	68.64			83.65				66.25
		107.11	102.03	97.67	91.02			118.50				88.27
387		85.77	86.03	82.87	78.87			99.07				
		89.53	86.10	82.46	77.86			98.15				75.40
		119.88	114.80	109.90	100.79			130.57				100.00
389		96.57										
391		132.76										
		50.66	78.18	74.96	70.96							
		31.50	75.07	76.48	66.31							
392		102.67	103.09	99.20	92.09							
		78.64	75.20	72.14	68.14			88.66				
		78.76	75.33	71.68	67.07			87.88				
393		105.01	100.46	90.57	87.43			116.51				
		60.80	57.11	54.65	50.90			71.65				
		61.80	53.97	54.73	50.11			70.42				65.70
394		80.40	77.80	72.96	66.31			98.89				60.98
		84.56	81.88	78.66	74.66			90.76				73.19
		80.33	82.15	78.50	73.89			94.20				71.45
		114.11	109.53	104.67	98.32			120.60				95.27
406		75.11	76.07	73.91	68.91			89.57				
		81.03	77.79	74.25	69.64			89.95				
		102.40	102.57	99.00	92.25			119.63				
407		86.60	83.65	80.70	76.70			99.10				
		88.43	85.00	81.05	76.74			97.05				75.53
		117.71	110.30	105.47	101.82			129.40				96.44

R No.	NAME	1907				10	S.P.C.	1908				1000	1/2 Brie.	Brie.
		1/4	1/2	1	5			1/4	1/2	1	5			
349	Edm. Amey.	98.05	95.31	92.15	88.15			1.10	14.19				80.58	84.23
	Shut	99.57	96.16	92.51	87.90			10.80	18.98				80.46	83.49
351	" " Full Cut.	102.79	101.81	100.00	100.00								118.90	111.03
		75.55	75.70	72.04	68.52									
		79.87	76.16	72.81	68.60									
		106.00	101.90	97.01	90.90									
352		76.95	74.31	71.00	67.00									
		77.90	74.47	70.82	66.21									
		100.87	99.39	96.43	88.28									
353		80.10	77.39	72.85	70.85									
		81.12	77.69	74.06	69.60									
354		108.16	100.57	98.78	92.57									
		79.90	77.21	74.05	70.60									
		81.08	77.65	74.00	69.60									
355		108.11	100.00	98.67	92.60									
		82.57	79.80	76.07	72.67									
		83.87	80.00	76.80	72.80									
356		111.77	107.40	102.57	96.07									
357		80.50	77.81	74.65	70.60									
		82.53	79.10	75.45	70.84									
		110.06	100.47	100.60	94.40									
358		80.10	77.67	74.39	70.89									
		81.56	78.18	74.48	69.87									
359		108.75	104.18	99.81	93.16									
					71.78									
					71.60									
360		79.61	76.87	73.71	69.71									
		81.07	77.64	73.99	69.58									
		105.09	100.00	98.60	92.51									
361		79.08	76.34	73.18	69.18									
		79.77	76.34	73.69	69.08									
362		106.00	101.79	100.00	90.77									
		79.20	76.51	73.05	69.00									
		80.89	76.86	73.81	69.60									
363		107.05	102.48	97.61	91.47									
		81.03	77.09	74.43	69.80									
		81.52	78.11	74.46	69.80									
364		108.70	104.10	99.88	93.10									
					55.11									
					56.31									
					70.08									
365		57.27	54.53	51.57	47.07									
		57.70	54.30	50.25	46.06									
366		76.97	72.40	67.53	61.39									
367		80.02	77.28	74.12	69.09									
		81.78	78.35	74.70	69.60									
368		109.00	104.47	99.60	93.45									

General Average Costs 1904

S. W. P.
Sulphur Unit Ave.
Sales

$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	Bulk			
109.77	107.28	106.33	105.90	87.37	96.13			
102.137	174.336	573.217	210.409	1570	34925			

S. F. P.
Sulphur Ave.
Sales

Pt.	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	5				
100.28	86.45	82.40	78.85	75.53				
157	22712	29539	23862	3815				

S. F. P.
Sulphur Ave.
Sales

121.49	106.04	101.36	96.75					
83	7327	11170	9229					

Alonzo
Sulphur Ave.
Sales

145.15	129.89	127.04	122.08					
1871	4861	1951	1078					

Crackhouse Filler
Sulphur Ave.
Sales

1	2	5						
7.32	6.53	6.15						
8077	4744	3405						

Floor Wax
Sulphur Ave.
Sales

17.37	15.47	15.25						
1653	2488	2750						

S. J. C.
Sulphur Ave.
Sales

Pt.	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$					
145.37	131.77	128.15	123.85					
77	1261	1390	2563					

Cummins Road
Sulphur Ave.
Sales

$\frac{1}{16}$ Pt.	$\frac{1}{8}$ Pt.	Pt.	$\frac{1}{4}$	$\frac{1}{2}$	1	5		
5.55	9.51	16.68	118.01	113.68	109.00	101.79		
7120	11295	15940	7708	6280	6292	425		

R 710 China White
Sulphur Ave.
Sales

6.11	10.64	18.89	135.91	131.56	126.87	132.73		
26	1	54	142	29	172	10		

R 726 Crimson
Sulphur Ave.
Sales

6.44	11.31	20.21	146.25	141.91	137.21			
448	552	632	2182	992	67			

Annual Average Costs (cont.)

	Pt.	1/2	1	5	Bal.				
Onosote Pt. #1 Incl. Ave. Sales		57.55 1656	53.50 12769	46.56 14225	41.09 1956				
#2 Incl. Ave. Sales		68.72 385	63.36 3311	56.61 4890	50.17 279				
	1/4	1/2	1	5	1/2 B.	Bal.			
Graphite Pt. Incl. Ave. Sales	84.00 167	79.32 328	74.65 1625	68.51 2175	65.25 1577	62.63 21428			
Copper Pt. Incl. Ave. Sales	139.19 546	134.59 629	120.17 2852						
	1/4	1/2	1	5	Bal.	1/2 Bal.			
(Semi-) Metalaastic. Incl. Ave. Sales	80.05 197	76.51 65	70.69 2728	64.48 5625	58.77 28173				
(Ready for Lib.) Incl. Ave. Sales	77.48 106	73.15 229	68.32 1132	62.03 965	56.97 202				
Commonwealth B. Rd. Incl. Ave. Sales	60.49 72	56.07 30	51.13 36897	45.15 48535	39.29 5294	41.87 1085			
Roof & Bridge Pt. Incl. Ave. Sales		56.19 2630	52.08 20212	47.11 30590	41.51 14170				
	1/4 Pt.	1/2 Pt.	Pt.	1/4	1/2	1			
Family Pt. #1 Incl. Ave. Sales	465 32086	772 216907	13.37 18569	22.61 23292					
#2 Incl. Ave. Sales	5.13 10146	8.44 58251	14.13 17446	24.63 2266					
Buggy Paint #1 Incl. Ave. Sales		10.77 52312	19.12 73637	33.88 49642	133.09 295	130.67 883			
#2 Incl. Ave. Sales		12.29 28396	21.92 35736	40.27 14426	155.72 96	158.07 140			
Enamel Leather Dressing Incl. Ave. Sales		10.13 7166	14.85 4086	24.22 635	77.85 164	69.20 160			

Annual Average Costs (cont.)

	$\frac{1}{4}$ Pt.	$\frac{1}{2}$ Pt.	Pt.	$\frac{1}{4}$	$\frac{1}{2}$	1	5	Bul.	$\frac{1}{2}$ Bul.
Var. Stains									
Unit Ave.	5.99	10.41	12.57	33.19	127.04	122.08			
Sales	27046	8882	78744	20581	2525	860			
Enamel Pt.									
Unit Ave.	6.31	11.05	19.61	35.36	136.75	132.52			
Sales	32992	28234	9419	4947	1345	1762			
Low White En.									
Unit Ave.	7.79	14.00	25.60	188.65	184.63	180.11	174.69	173.47	
Sales	580	695	411	122	153	538	70	137	
Flat. Black Finish									
Unit Ave.	5.89	10.21	18.01	34.24					
Sales	2878	2750	1107	822					
Back Enamel									
Unit Ave.		15.65	28.92	54.05		207.00			
Sales		10209	3932	442		4			
Wagner Inks Pt.									
Unit Ave.			110.05	97.08	94.99	91.04			
Sales			2830	14153	4429	4429			
Low Enamel									
Unit Ave.		7.37	12.41	20.91					
Sales		21863	15164	5523					
Aluminum Pt.									
Unit Ave.	9.28	17.28	32.56	61.33		236.89			
Sales	23212	17906	7168	8240		2107			
Oil Stains									
Unit Ave.		6.14	9.71	16.31	61.24	56.65			
Sales		8535	7321	4317	997	726			
SW Liquid Filler									
Unit Ave.		122.63	103.61	18.51	84.43	79.84	77.00	69.05	71.31
Sales		116	337	1985	3817	9424	205	102	29
Shellacine									
Unit Ave.		78.96	60.05	45.05	41.83	36.51	33.76	27.95	30.20
Sales		1	2	1353	2563	12734	1575	1557	367

Annual Domestic Costs (cont.)

	Tubes	1	2	5	10	12	25	100	1/2 Bl	Bila	SPB
Cast Fillers Kent Ave. Sales		6.63 7469	5.65 4491	4.88 11883		4.80 14000	4.80 17173	4.36 2707			
R43 Superior Black Kent Ave. Sales						4.52 625	4.35 2113	4.04 3148	3.39 980	3.38 3892	
Machine Pl. Kent Ave. Sales							4.52 28567				
Machine Fillers Kent Ave. Sales		6.99 66		5.73 455			4.91 19000	4.59 7300	3.93 75488	3.91 105894	
R198 Metallic Brown Kent Ave. Sales						3.80 475	3.69 2650	2.97 600	2.73 1796	2.71 ✓	
R1021 Kent Ave. Sales				4.19 5		3.59 1862	3.43 9525		2.49 2907	2.47 2558	
R186 Orches Kent Ave. Sales						4.24 7213	4.13 19575	3.83 5620	3.17 3989	3.15 10166	
R192 Kent Ave. Sales						3.51 19225	3.33 56800	3.03 10700			
R236 Kent Ave. Sales	3.53 15	6.92 10716	5.97 1824	5.88 4966	7.13 ✓	5.25 19442	5.16 48300	4.77 6400	4.15 1266	4.17 764	
R484 Eng. Vm. Redo Kent Ave. Sales				3.43 15		3.39 14125	3.21 52250	2.91 10100	2.28 9115	2.25 6597	
R187 Kent Ave. Sales				5.13 5		4.47 4250	4.36 23825	4.05 2700	3.40 1445	✓ 3603	
R231 Kent Ave. Sales	2.77 19	7.21 8789	6.40 812	6.40 3435		5.76 8188	5.60 27000	5.29 10100	4.67 10698	✓ 564	6.96 240
Graphite Kent Ave. Sales		7.72 210		6.69 260		6.05 2488	5.96 4750	6.07 25	4.95 1696	4.92 9852	
White Kent Ave. Sales						5.75 23817	5.58 300825	5.01 7590	4.81 1399		
P. O. P Kent Ave. Sales						5.68 77863	5.57 608000				

General Average Costs (cont.)

	1	2	5	10	17 1/2	25	100		
<i>Zincs</i>									
R 11 <i>Bunch White</i> <i>Cent Ave</i> <i>Sales</i>					5.58 18962	5.40 28175			
R 20 <i>SW Standard</i> <i>Cent Ave</i> <i>Sales</i>	10.65 1562	9.79 802	9.18 2510		8.91 18979	8.72 29800	8.52 1650		
R 21 <i>SW Red Seal</i> <i>Cent Ave</i> <i>Sales</i>	10.55 965	8.97 558	8.72 980		8.44 10924	8.25 26925	8.05 1100		
R 24 <i>Bunch Zinc in Plate</i> <i>Cent Ave</i> <i>Sales</i>	14.53 904	12.77 432	12.55 1970	12.07 320	11.7 462	11.65 3175	10.41 1800		
	1	2	5	25 Keg	100 Keg	1/2 Bbl.			
R 8 <i>American Lead</i> <i>Cent Ave</i> <i>Sales</i>	5.03 40512	4.38 35078	3.94 25310	3.63 25	3.11 2401	2.87 2324			
	17 1/2 Keg	25 Can	25 Keg	50 Keg	100 Keg	500	1/2 Bbl.	12 Can	5
R 14 <i>Kennington</i> " <i>Cent Ave</i> <i>Sales</i>	6.13 7777	5.16 3200	5.52 13298	5.20 13200	4.97 25000	4.72 4581			
R 15 <i>Standard</i> " <i>Cent Ave</i> <i>Sales</i>	6.52 13721	6.12 8525	5.96 81096	5.69 87850	5.53 244178	5.31 1510		6.73 15438	6.44 5
R 19 <i>Crack & Bar</i> " <i>Cent Ave</i> <i>Sales</i>	8.41 3612		7.77 7000	7.48 20625	7.25 47250			8.12 5	
	1/4 Plt	1/2 Plt	Plt	1/4	1/2	1	5	1/2 B	Bbl.
<i>Sopal</i> <i>Cent Ave</i> <i>Sales</i>		11.31 13896	20.59 14964	163.91 2730	151.71 3494	143.83 14557	134.07 2237		127.37 151
<i>Exello</i> <i>Cent Ave</i> <i>Sales</i>		9.67 5717	16.96 6295	137.57 1202	125.37 1827	117.49 9464	107.73 1710	103.44 141	101.04 202
<i>Magnot</i> <i>Cent Ave</i> <i>Sales</i>	5.82 4	10.05 208	17.73 4342	143.84 2468	131.64 3300	123.76 4970	114.00 1115	109.71 56	107.31 363

General Average Costs (cont.)

N. No.	Sent. Rev. 1 st	Sales Ali. 2 nd							
102	12.76	3590 ¹							
215	10.01	59629 ^{1/8}							
216	13.39	70838							
217	14.73	1413 ¹							
218	26.01	19782 ²							
219	15.17	5045 ²							
221	9.77	12420 ¹							
222	9.49	37525 ²							
223	10.48	24812							
224	10.47	33707							
225	9.91	6623 ¹							
227 ^m	8.79	35839							
228 ²	12.19	5612							
230	10.24	28768							
231	7.21	69845							
233 ^m	14.39	43406 ²							
235	7.72	7756 ²							
236	6.92	94118							
237	11.65	15995							
238 ²	74.05	1149							

Remain Non-Fading Red
Sent. Ave.
Sales

F. C. G.
Sent. Ave.
Sales

P. J. C.
Sent. Ave.
Sales

1	2	5	10	50 ^{P.C.}	122	25	100	1/2 Bal.
8.52	7.77	719	7.35	8.31	7.13	6.97	6.64	6.04
2425	198	2840	10	865	637 ²	5750	5130	100779
8.45	7.68	713			7.04	6.89		
11850	8644	20460			23400	34050		
8.15								
26120								

General Average (Contd.)

<i>Blanket A. No.</i>		<i>Bank</i>	<i>Sales</i>			<i>Pl. No.</i>	<i>Bank</i>	<i>Sales</i>		
		<i>(Contd.)</i>	<i>All signs</i>				<i>1st</i>	<i>All signs</i>		
—	120	16.47	71577 ¹		Yellow	138 ^m	19.00	11506 ²		
	121	20.48	6325			4158	12.68	1069		
	175	16.63	42667 ²			4262	14.69	3200 ¹		
	177	15.59	3420		Brown	128	16.61	5593		
Sinterifer	265	7.21	878			131	15.25	3248		
	273	7.11	1344			133	16.52	213		
	282 ^m	7.37	281			4200	14.60	654 ²		
Reds	125	15.68	9845			4381	19.60	96		
	145 ^B	22.95	493 ²		White	144	18.64	4232 ²		
	149	225.80	447							
	158	63.86	22							
—	166	20.76	700							
	248	20.65	9148							
	1536	2220	3825 ²							
	4056	18.63	18842 ²							
	4189	20.30	1321 ²							
	4609	18.80	7329							
	4700	22.63	7924 ²							
	Green 134 ^m	21.31	14295 ¹							
	4474	19.05	624							
	4581	18.63	462							
Blue	4620	16.61	2651							
	8151	16.72	211							
	147	20.76	2248							
	148	24.43	2050 ²							
	241	15.33	326							
	4319	18.91	519							

Package Chart

1/4 Pt.	1/2 Pt.	3/4 Pt.	1/4	1/2	1	5	1/2 B.	Bal.			
14	20	106	109	65	10	7 ⁵					
1/4 Pt.	1/2 Pt.	3/4 Pt.	1/4	1/2	1	5	1/2 B.	Bal.			
14	20	106	109	65	10	7 ⁵					
1/4 Pt.	1/2 Pt.	Pt.	1/4	1/2	1	5	1/2 B.	Bal.			
14	20	106	109	65	10	7 ⁵					
	Lg	Lg	Lg	Lg	Lg	Lg	58.55	10.5 jacket			
Subs	1/1"	1/2"	1	2	5	10	5.5	11.5	12.2	25	3rd #0000
403			49	108	55		9 ²		31		
603			50	54	65		7 ²		11		
403			49	108	55		9 ²		31		
1203			15	50	54		4 ²		65	66	
603	77	15	49	54	65		8 ²		11		
603	77	15	21	107	58		4 ²		66	12	
603			50	54	58		7 ²	13	66	12	
603			50	54	58		7 ²	13	66	12	
603			50	54	58		6 ²	13	66	12	
803			50	54	58		7 ²	13	66	12	
503			49	108	65		9 ²		11	12	
1003			28	49	108		4 ²		51	11	
			15	50	54						106
1003			28	49	108		4 ²	9 ²	55	11	
803			27	49	25		5 ²	9 ²	51	11	
1003			28	50	108		4 ²	7 ²	55	11	
803			24	107	25		5 ²	11 ²	84	31	
803			21	107	25		6 ²		66	12	
803			27	49	25		5 ²		51	11	
1203	77	15	50	54	54		4 ²	9 ²	55	66	

106

Package Chart

		1	1/2	1	2	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Blacks	2. D																								
	170	9		21	54	58	84	72	14	66	12														
	171	9		21	54	55	84	72	14	11	15														
	175	4		21	54	58	84	72	14		12														
	179			49		65	66	92			11														
Sistempu	265																								
	273																								
	282																								
Reds	125	9		77	27	49	25	55	52	92		11													
	145	9		77	15	21	54	55	12	62		34													
	149	3		77	28	49			92																
	158			23	50				82																
	166	9		15	24		58		62	112															
	248	9		21		55	51	62	13		12														
	1536			15		54	58	42	72		66														
	1056			24		108	55	52	92		31	29													
	1187			24		25	51	52	112																
	4609			24		108	55	52	92		11														
	4700			24			65	52	92		11														
Greens	134	9		77	49	25	55	52	92		11														
	1474			21		58	84	72	13		12														
	4581			21		58		62																	
	4620			21				72																	
	8151																								
Blues	147	9		28	49	54	65	66	82	14		12													
	148	9	77	15	21	107	58	51	62	112		12													
	241	9		77	28		58		52																
	4319	9		21		58	51	62	112		31														

Packages Chart

2. L.
Yellow R. No.
138*

4158

4267

Brown 128

131

133

4200

4381

White 144

Leads
R. No. 8

14

15

19

	1/4	1/2	1	2	5	10	50	100	250	500	1000	2500	5000	10000	25000	50000	100000	250000	500000	1000000
9			27	50	108	65	52	92		11										
			15		54	58	42	72		84										
			15		54	58	42	72												
9			21	22	58	51	62	13		12										
9			21	22	58	51	62	13		12										
9			21	22	25	51	62													
			21		25	51	62	112		21										
			24				62													
9			15	49	54	58	42	72		84										
128	250	500	1000	5000																
Reg	Reg	Reg	Reg	Reg																
3	8	17		42																
3	7	16	23																	
		13	19																	

Dry Color

11
10-1-06
100

Lewis Berger & Sons Ltd.
Makers of Paints, Colours and Varnishes.

Offices and Works:

Homerton, LONDON, N.E.

August 14th.

1906.

Handwritten:
AUG 16 1906

Mr. W. R. Sisplein,

Dear Sir,

Herewith are particulars relating to the testing of Dry Colors as done at our Chicago Dry Color Works.

An envelope sample of each batch of all colors made, is sent by the foreman to the Testing Laboratory. This sample is taken before the colors are ground, in order to avoid admixture with any other batch. About once a week, or if frequent enough, every two weeks, painting tests are made of the accumulated samples, as follows:-

A number of regulation panels, about $2\frac{1}{2}$ " x 9" x $\frac{1}{4}$ " thick, are dipped in Raw Oil, and allowed to dry. These are then painted with two coats of color, which has been milled with Raw Oil and a small amount of drier, and when both coats are dry, a thin coat of varnish is given. It does not much matter what proportion of drier and oil is used, or what varnish is used, so long as all tests are absolutely uniform.

When the varnished panel is dry, it is exposed in a long rack, holding about one hundred samples, which are arranged in such a way that the top of the panel for about 3" down, is protected by a hinged flap. The balance of the panel is exposed to the strongest possible sun light, and when the exposure is finished, comparison is made between the top and bottom portions of the panel. We usually expose all colors for one month, and if considered desirable, continue the exposure indefinitely. The grading however is always based on one month's exposure.

We grade the colors in the following manner:-

- A. - would indicate no change at all.
- B. - A slight difference in appearance, but no material loss or change of color.
- C. - A slight but noticeable fading or darkening of the color.
- D. - A medium amount of change, and
- E. - An extreme and entirely unwarranted change, or as we should say in America, when the color has gone entirely to the bad.

Mr. W. R. Sieplein.....No. 2.

The rating, or grading of each batch is then entered on the formula card (small white formula card in filing case) and also in the Exposure Book. We number all exposures consecutively, and keep track of the exposures by these numbers, stenciling the number on the front of the panel at the bottom.

In connection with this system, we also adopt the following method of keeping track of Manufacturing Instructions:-

A Filing Card with a red top is used in connection with the batch formulas, and on this card is written the complete manufacturing instructions for that formula. When any change is made in the method (other than a mere change of weight) a new red card has to be made out. In this way all formula cards between two red cards will be made on the method indicated by the ~~last~~ ^{first} red card.

We then find that the accumulation of gradings in connection with the Manufacturing Instructions will give very valuable information regarding the permanence of the various methods of making colors.

Yours very truly,

H. A. Araly

HMA/FT.

August 14th. 1906.

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Yours very truly,

HMA/FT.

May
7 1906

104 CANAL STREET
CLEVELAND, O., U. S. A.

LEWIS BERGER & SONS, LTD.
FOR W. R. Sieplein
Gen'l Supt.

London Eng.

DATE

4/21/1906

SUBJECT

Vacuum Dryer

May 7 1906

Replying to yours of the 4th inst. I beg to hand you herewith
copy of Mr. Ashby's letter of the 13th inst. with reference to
the subject of dryer. You will note that he gives full details
with referenceto the mat' er and strongly recommends our type of
hot air kiln for the majority of this work. I think you have
a blue print showing construction of this.

Yours svery truly,

J. C. Beardslee
General Superintendent

3-5

J. W. G.
7 MAY 1906

COPY

4/18/1906

Mr. J. C. Beardslee,

Gen'l Supt.

Dear Sir:

In reply to your letter with enclosed communication from Mr. Siplein I have the following facts to give you.:

I most unhesitatingly would recommend Mr. Siplein not to get a vacuum dryer. Theoretically they are very nice but practically they do not work out unless great improvements can be made over our type.

The Vacuum Dryer runs about 10 1/2 hrs., using 36 pounds of coal per hour at 1.60 per ton plus 80cent. for handling (the coal) it dries 1000 lbs. of chrome yellow.

The pump requires 10 H.P. per hr. running 10 hrs. at 2¢ per H.P. Hr., thus the cost is 50 ¢ for coal and 2.00 for power = 2.50 per 1000 lbs.

Hot Air Kilns

We run 18 rooms 6 x 6 x 6 all the time and they take 1200 lbs. of coal per night at 1.60 per ton plus 80¢ for handling = 1.60

In the day time these use exhaust steam for which no charge is made. They take 7 H.P. per hr. for 24 hrs. at 2¢ = 3.36 - total 4.96. They will dry 5000 lbs. of yellow per day, therefore cost per 1000 lbs. equals 1.00

Steam Kilns

Our large steam kiln contains roughly 7000 lineal ft. of 1 1/4" pipe with steam at 40 lb. pressure running 20 hrs. per day. It uses 2200 lbs. of coal per day at 1.65 plus 50 percent equals 2.65 per day. No H. P. required.

A batch of yellow takes over a day to dry, so has to occupy the kiln two days. This kiln will hold 8000 lbs. of yellow so only dries 4000 lbs per day. Cost per 1000 is 66¢.

The following facts should be considered in connection with the above.:

The Vacuum Dryer on account of its peculiar construction takes much more labor to prepare the trays and to load and unload it than the other two and in some cases does not give as satisfactory shades.

The Hot Air Kiln is the only one that will dry the medium and light shades of yellow in a thoroughly satisfactory way.

We use the steam kiln only for the orange shades and occasionally for the medium.

I would strongly recommend the hot air type of kiln as it is far more reliable & will give better shades and any color can be dried in it. Of course this is providing that exhaust steam can be obtained during the day.

If necessary I will have a complete sketch made showing the details of this kiln.

Yours very truly ,

(Signed) H. W. Ashby,

Superintendent

H.M.A. - H.

OUTPUT OF DRY COLOR DEPARTMENT

From an 800 gal. tub the output is from one ton to four tons of Lead Eosine Vermilions per day. The output on this is almost unlimited. In one 2000 gal. tub can be made about 700# per day of Lakes on the formula of 10096. In each 2000 gal. tub can be made about 1000# of C. P. Chrome Yellow every three days. In a 2000 gal. tub can be made 300# of 11023 C. P. Blue in one week. All Lakes of the class of 10049 can be made about 500# per week in each large tub. The Paranitriline outfit, consisting of one small iron tank, one small wooden tank, one 400 gallon iron tank, one 300 gallon wooden tub and two 2000 gallon wooden tubs, can be made either 12,000# 10091 per day, or 600# 10109, or 600# 10078, or 10064 per day. All Greens can be gotten out the amount proportional to the Blue present; that is to say, the capacity of the Green output is identical with the capacity of the Blue. If the ton batch of Green contains 200# of Blue, then 2 tons could be gotten out in each batch per week. About 500# of Paris Green per tub is gotten out every two days. On fancy Lakes such as D-464 and Alizarine Lake, the product varies from 100# per week to 500# per week per tub.

OUTPUT OF RAYMOND MILLS

Heavy lead Eosine Vermilions run about 1500# to one ton per hour. 10091 runs about 800 to 1000 per hour. 25% Greens the same. Lakes like 10049 and 10096 run 400 to 500# per hour. Chrome Yellows on the little mill run about 150 to 300# per hour. The colors range then according to the gravity from 150# per hour to 2000# per hour. The heavier in gravity and more sandy they are, the quicker they grind and the lighter the gravity and fluffier and stickier they are, the slower they grind. The small Raymond Mill takes about 7 H.P. per hour, and the large Raymond Mills, when set up properly as they are in our place, take about 20 to 22 H.P.

ABSTRACT FROM Mr. ASHEY'S LETTER dated 9/2/05.

As to the cost of drying these colors, I really cannot give you any reliable data. To do this we would have to establish a cost bearing in mind the time of each pound of color in the dry room and the amount of space it occupied; that is, we would have to get a unit cost per hour per foot. This is something which is at present beyond us. In general, however, one ton of Vermilion will dry in about 36 hours in an air drying kiln heated to 160° fahrenheit and occupy a 6 ft. cube. It costs roughly \$200.00 per month to keep 42 of these 6 ft. cubes in commission, aside from the labor. The C. P. Chrome Yellow, one ton, will take four days (for the Yellows the temperature is kept about 100°). C. P. Greens, Lakes, Blues, etc., occupy varying spaces in the kiln up to four cubes to the ton and will all dry within four days. A Premier Red, one ton, will occupy one and one-half cubes and take 54 hours to dry. The 25% Greens will average about the same.

DRY COLOR FACTORY

Classification of Service for Factory
Service Report

GENERAL - All Non Productive Service

A - General

Foremen of the department, foremans clerk, janitor, elevator man, laboratory assistants.

B - Office

All department office work.

D - Watching

All service for night watching. Includes watching on Sundays and holidays.

POWER

E - Power

Service for all men in the department power plant if a separate one exists.

DIRECT PRODUCTIVE LABOR

STRIKING

G - Striking

All work of putting together the materials used in the batch and the further work of striking or precipitating the color.

WASHING, FILTERING & DRYING

H - Washing, filtering and drying.

GRINDING

I - Grinding

All work in connection with the mills.

BLENDING

L - Blending

All work in connection with the correcting of blending together different batches after they have been ground.

FILLING

M - Filling

All work of filling into small packages less than barrels.

HANDLING STOCK

X - Handling Stock

All work of handling raw materials and finished stock.

JOB ORDER SERVICE

All service repairing about the department charged to Job Orders which are later charged into the expense accounts.

DRY COLOR FACTORY.

Classification of Expense for Factory
Expense Report

GENERAL

1 - OFFICE EXPENSE -

All stationery and supplies used in factory office, suppers, office telephones, renewal of lamps, repairs to furniture, postage and office sundries.

2 - GENERAL EXPENSE -

2 a - Insurance -

Insurance on Plant and Stock, charged by General Accounting Dept.

2 b - Taxes -

Taxes on Plant and Stock, charged by General Accounting Dept.

2 c - Laboratory -

All laboratory expense, including samples, renewal of lamps, repairs, rags, glass, telephone, stationery, chemicals, apparatus, books and sundry supplies.

2 d - Ice -

All ice used in factory for ice water.

2 e - Factory Sundries -

Special items and small sundry expense items which cannot be directly charged to a department, new overalls, new towels, etc.

2 f - Laundry

4 - MAINTENANCE OF BUILDINGS -

4 a - Sundry Repairs -

All small repair jobs; repairing doors and fire shutters, replacing broken windows, etc.

4 b - Painting -

All painting to outside of buildings, fences, etc, inside painting to be charged to department occupying room.

4 c - Large Repair Jobs - itemized specially.

POWER -

7 a - Lubricants -

Oils & Lubricating compounds of all sorts.

7 b - Sundries -

Waste, rags, packing, belt dressing, polishing, material, sundry tools and all general power expense.

7 c - Special Items -

Water rent, power from outside sources, etc.

8 a - Electric Current

8 b - Gasolene

8 c - Live Steam

8 d - Heat

8 e - Light

)
)
)
)
)

Regular charges for items as noted

9 - MAINTENANCE -

All Power Maintenance Expense

10 - INSURANCE EXPENSE -

Watching Expense, maintenance of fire apparatus, including fire pails, sprinkler system, hose, extinguishers, etc.

MANUFACTURING EXPENSES -

STRIKING -

11 A - 1 - Maintenance

Repairs to machinery, piping, apparatus, etc.

11 A - 2 - All sundry departmental expense and supplies.

WASHING, FILTERING & DRYING -

11 B - 1 - Maintenance

Repairs to machinery, piping, apparatus, etc.

11 B - 2 - All sundry departmental expense and supplies

BLENDING -

11 C - 1 - Maintenance

Repairs to machinery, apparatus, etc.

11 C - 2 - All sundry departmental expense and supplies.

GRINDING -

12 A - 1 - Maintenance

Repairs to machinery, apparatus, etc.

12 A - 2 - Sundry Supplies, rags, tools, etc.

ADMINISTRATION DEPARTMENT -

25 a - Interest -

As charged by General Accounting Dept.

25 b - Administration -

As charged by General Accounting Dept.

25 c - Employees Welfare -

Proportion of Lunch Room Deficit, Chameleon charge, picnic and welfare exp.

GENERAL SUPERVISION -

26 a - General Supervision -

As charged by General Accounting Dept. Also includes salary of Dept. Supt.

26 d - Unusual Items -

Such items of general factory expense as are not likely to occur again and which do not belong to expense of running a department.

26 e - Purchasing Department -

Billed as such by General Accounting Dept.

12010 G. P. Pure Chromate 95-98%
 11068 Between 11024 & 11025 in shade G. P.
 12011 Basic Lead Chromate
 12012 " " "
 12017 " " " @ 25% SO₆
 12018 " " " " "
 12019 " " " " "
 12020 " " " " " Shade of 12012
 10184 16-2/3% Para Dye Bulletin Red Bal. 16 Powd.
 10182 Dark Maroon Lake practically pure (base of alumina)
 10181 Lt. Para 7-5% 112 and bal. 16 in lump
 10180 Scarlet Lake. Qual. of 10180
 10177 Dk. Para ; same shade as 10064 7% dye - bal 16 in lump
 10176 Tartar Red 7% Ortho Anisidine dye - bal. 16 powd. Bleeds worse than Para
 10174 Med. Para Red - 7% dye - 10% 112, bal. SO₆
 10172 Deep shade Para 7% dye - 10% 112, bal. SO₆
 10170 Deep Para 15% - 7 1/2% Zinc, 32 1/2% SO₆ - 40% 16
 10167 Lt. Para 7 1/2% - 10% Zinc, 27 1/2% SO₆, 27 1/2% 16, 27 1/2% S.
 10148 Gen. Eng. Rose Lake
 10145 D. U. 7 1/2% Para - 37 1/2% SO₆ - 50% 16 - 12 1/2% 112.
 10135 9% Lead Chromate - 28% Orange Mineral - 20% 112 - Rest Tot. Lake
 10132 Pure Alizarine Lake
 10131 G. P. Alphanaphthylamine
 10127 40% Para dye - 5% 112 - 42% SO₆ - 24% 16 - 24% S
 10125 20% Dye - 20% Pomolite - 16% SO₆ - 16% 20 - 28% 16
 10121 G. P. Lt. Para
 10109 G. P. Dk. Para
 10091 7% Med. Para - 12% 112 - Bal. SO₆
 10080 G. P. Orange Mineral Vermilion - Rosine
 10078 7 1/2% Alphanaphthylamine - 48% SO₆ - 68% 16
 10071 Rosine, Orange Mineral
 10066 Orange Lake, pure
 10064 Dk. Para 7 1/2% - bal. 16
 10063 White Lead Rosine Verna.
 10062 Florence Red Verna. Lt.

10051 Dk. Red Lead Eosine Verm.
10052 50% Red Lead)
50% Orange Mineral } Eosine Vermillion (Same shade as 10006)
10020 Lt. Eosine Orange Mineral Verm.
10004 Orange Mineral base - Eosine Vermillion.

DRY COLORS MANUFACTURED BY THE SHERWIN-WILLIAMS CO.

10004 is a medium shade Lead Eosine Vermilion. The base is 15% Lead Sulphate and 85% German Orange Mineral. This material carries in the neighborhood of 2.6% Eosine. Before the Orange Mineral is dyed, it is first ground fine in the Raymond Mill, and in this way this color can be used for fine Q. D. work without danger of its livering. Where it is impossible to grind fine before making, the French Orange Mineral should be used.

10007 is a very light shade Lead Eosine Vermilion for Paste purposes, made on the cheapest native American Orange Mineral. It carries approximately 1% Eosine. This is not suitable for Q. D. work as it would liver.

10020 is the lightest Vermilion made on German Orange Mineral, and is similar to 10004 in every way, except for the shade. It carries approximately 1.8% Eosine.

10027 is no longer used.

10028 is no longer used.

10031 is a Vermilion made for Trade Sales purposes the base of which is 60% American Orange Mineral, 40% Barytes, the whole color carrying about 1.2% Eosine.

10032 is supposed to be the same thing as 10004, except for the fact that it is made of American Orange Mineral instead of Imported Orange Mineral. It is for use in Paste Paints, and cannot be used for Q. D. work on account of livering. It carries approximately the same dye as 10004 and also has the same percentage of Lead Sulphate.

10033 has the same base as 10031, but is deeper and carries about 2.5% dye. It is made for Trade Sales purposes.

10034 is a Trade Sales Vermilion, the base of which is 40% Red Lead, 60% Barytes and is dyed with $\frac{1}{2}$ % Eosine.

10036 is a Lead Eosine Vermilion for Q. D. and fine Paste Work, the base of which is straight German Orange Mineral ground fine, dyed with about 2-1/4% Eosine. The shade is between 10004 and 10020.

10049 is the deepest and strongest straight Scarlet Lake that we make (except Bordeaux, Wine Colors, etc). It contains about 30% of Scarlet Dye, the balance being chemically precipitated Barium Sulphate and the Barium to mordant the dye stuff. This Lake is suitable and specially designed for Q. D. Paste work and will not liver. It has not a very fine and clean tone but is strong and dark.

10050 is a Lead Eosine color, the base of which is straight American Orange Mineral and carries about 5% Eosine. This is for Paste Work and not for Q. D.

10056 is a Lead Eosine Vermilion in every way similar to 10050, except that it is somewhat lighter. This carries about 2% Eosine.

10058 is a Special Vermilion, the base of which is Native American Orange Mineral and the coloring matter is Scarlet Lake, made identically similar to 10049, but with the Orange Mineral pulped into it before it is dried, so that 10058 in composition is similar to a mixture of American Orange Mineral and 10049, but in shade is much brighter owing to the colors being blended during the process of making. It is no longer in use in America.

10061 is a Deep Lead Eosine Vermilion, designed for blending purposes when matching dry reds. The base is pure Red Lead and it carries about 5% Eosine.

10060 is a Lead Eosine Vermilion made for the purpose of incorporating adulteration with 10061 and 10062 in such a way that the dry material will not show white specks. Its base is 20% Red Lead, 80% Barytes. Its shade is about the same as 10061, and it carries about 1/4% to 1/2% of Eosine.

10062 is the same as 10061, except that it is the very light shade and carries about 3/4% of Eosine.

10063 is a Lead Eosine Vermilion of a very blue shade, the base of which is straight #9, or Lead Sulphate, and this carries about 3% dye stuff. It is used to obtain a bluer shade in combination with Orange Mineral or Red Lead Vermilions.

10064 is a Non-Fading Red Lake the base of which is Whiting dyed with Paranitraniline. The finished color contains about 7% of precipitated Paranitraniline, which is made so as to give the bluest shade possible.

10066 is an Orange Lake made on the same formula as 10096 except that an Orange dye is used instead of a Scarlet. It has considerable value for tinting, toning and for use in fillers.

10068 is a Lead Eosine Vermilion the base of which is straight American Orange Mineral and it carries about 4% Eosine. It has been used for Paste purposes, but is now superseded by 10086, which produces the same results cheaper.

10069 is a Lead Eosine Vermilion the base of which is either American Orange Mineral or Red Lead, and carries about 1/4% to 1/2% Eosine. It is approximately the same thing as 10007 but lighter.

10071 is the deepest Lead Eosine Vermilion we make. The base is 53 ground fine, and it carries about 6% Eosine. This was made originally for a substitute for English Vermilion but was unsuccessful in that field and is now used for Q. D. work.

10078 is a Maroon Lake made from Alphanaphthylamine. It is similar to 10064 except that the base is 1/2 Whiting and 1/2 Blanc Fixe (precipitated barium sulphate) and that the dye is Alphanaphthylamine instead of Paranitraniline. This gives a rather dark maroon or wine color which has the same property of bleeding in oil as Paranitraniline. It is fast to light when a thick coat is put on but in very thin layers, such as Varnish Stains, etc, it is not fast. The finished Lake carries in the neighborhood of 3% dye stuff.

10079 is an extra Bright Lead Eosine Vermilion the base of which is Tours' Orange Mineral, and which carries about 2% dye stuff. It is used only for fine Q. D. work.

10080 belongs in the same class as 10079 but is much deeper and the base has 30% of White Lead and 70% Tours' Orange Mineral. It carries about 5% dye.

10085 is no longer made.

10086 is the cheapest Vermilion we make for A. I. P. Paste work and was designed to get the deepest shade at the lowest cost. The base is either Orange Mineral or Red Lead, or a mixture, and it carries about 1-3/4% Eosine and about 2-1/4% Scarlet.

10087 is a Vermilion made entirely for Trade Sales work and is a mixture of equal parts 10031 and 10034.

10091 - Premier Non-Fading Red Deep, is a Paranitraniline Red, the base of which is 90% Barytes and 10% Zinc Oxide. This is dyed with Paranitraniline in such a way that the finished color carries about 6.4% Paranitraniline Dye.

N. B. In the above, when the statement is made that the base has a certain percentage, this means that certain proportions of materials are put together for the base and then dyed with the dye stuff. For instance, if the base is 60 parts Red Lead and 40 parts Barytes and this carries about 10% dye, the finished color would not contain quite 60% of Red Lead but would be a little less than that on account of the presence of the dye stuff.

10096 is a Special Scarlet Lake, the dye stuff of which is similar to that used in 10049, except that it gives a lighter shade. The base is a combination of Barium Sulphate Aluminum Hydrate and Calcium Sulphate blended in such a way and washed thoroughly so that it will not liver in Q. D. work. The finished color contains about 27% dye stuff.

10099 is the medium shade of Premier Non-Fading Red and is similar to 10091, except that the color is lightened by the use of Orange Mineral. This color is strictly N. G.

10100 and 10101 are varying shades of 10099 and the same thing applies to them as to 10099.

10107 is a Scarlet Lake made by blending 24 parts 10049, 3-1/4 parts 10063 and 3.2 parts 10078.

10108 is a Trade Sales Vermilion, the base of which is 60% American Orange Mineral, 40% Barytes and carries about 2% Eosine.

10109, Royal Durbar Red, is straight Paranitraniline dye of the deepest shade, and is similar to the general run of Pure Para Toners on the market.

10113 is a Deep Wine Color made on exactly the same formula as 10096 except that a deep Bordeaux or Wine Colored Dye Stuff is used instead of Scarlet.

10120 is the lightest and cleanest Scarlet Lake we make, and is similar in composition to 10096, except that it contains somewhat more alumina and has a lighter Scarlet as a dye.

10121, Royal Durbar Light, is similar to 10109 except that it is the lightest shade of Para we can make and has only 50% Para, the balance being chemically precipitated Calcium Carbonate.

10122 is a Scarlet Lake made on much the same formula as 10096, only giving a deep shade.

10123 is a Maroon Lake Deep made on the same formula as 10078 and is deepened by the use of a small percentage of Alphanaphthol.

10124 is a Pale Turkey Red made on the same formula as 10096, but a combination of Scarlet and Orange Dye is used. To cheapen it, about 25% of Blanc Fixe is added to the base.

10125 is a Deep Durbar Toner. This is a material made with a view to using Paranitraniline for toning without having to grind it out as is necessary when 10109 is used. It carries about 25% Paranitraniline, 25% Lithophone, 25% #20 and 25% #306. It has a bluer shade than any of the other Paras.

10126 is a match made for Rose Pink out of Dye Stuff. It is made on much the same formula as 10113, except that it is reduced by the addition of Whiting and also the dye stuff is deepened a little by the use of a percentage of a deeper dye than is used in 10113.

10128, Non-Fading Geranium Lake is strictly fast Red, originally designed for a Printing Ink to give all the desirable qualities of an Eosine Geranium Lake, with none of its disadvantages. It has the same general color and tone, but in addition, is fast to light.

Other colors will be made from time to time of this dye stuff, but more suitable for Paint Work.

10131 is of the same general character as 10109 except that the dye stuff is Alphanaphthylamine instead of Paranitraniline.

10132 is an Alizarine Lake designed for Printing Ink Work, but excellently adapted to Lacquer and Varnish Stain purposes. It is somewhat purplish in tone but is quite fast to light.

10133 is a match for 10091, made of the same dye as is used in Non-Fading Geranium Lake. It is fast to light, has exceptional covering powers, and will not settle badly in a liquid paint. It is specially designed as a house paint to take the place of 10091 in 374. The price is high but only a small amount need be used per gallon. Made like 10128.

11000 is the light shade French Crown Green and carries about 25% Pure Green. The base is Barytes with a small percentage of China Clay.

11001 is the medium shade of this line and carries the same percentage.

11002 is the deep shade and carries the same percentage.

11003, 4 and 5 are the light, medium and deep shades of #1 Chrome Greens made for 6# cans. They carry about 10 to 15% pure green.

11006, 7 and 8 are the light, medium and deep shades of mixed Greens which are made of off-shade batches of 25% Greens. They run on the olive shade and are only used as a dumping grounds for off-shade batches.

11012 is a Special Green made for Milburn Wagon Co. It is 25% Pure and is similar in character and near in shade to 11002.

11013, 14 and 15 are the light, medium and deep shades of French Permanent Green. They are of a bluer shade than the French Crown Greens and only carry 20% pure Greens.

11016, 24 and 25 are the deep, medium and light shades respectively of the C. P. Greens. These are used principally for combinations with Black and contain nothing but Pure Chrome Green.

11018, 19 and 20 are the light, medium and deep shades of the 50% Chrome Greens. These are supposed to be approximately the same as the French Crown Greens but are 50% pure.

11021 is a Special Ultramarine Blue Substitute made of artificial dye stuff. It was produced for the purpose of getting a substitute for Ultramarine Blue at a lower price, but was not much used on account of its fugitiveness. It is still useful, however, where price is the only consideration.

11023, Chinese Blue #11, is our Pure Chinese or Milori Blue.

11026 is Pure Paris Green.

11029, #138 O. D. D. Green, is a Special Green of about 30% purity of a peculiar blue shade.

11030, #1 Prussian or Chinese Blue, is a Blue containing 10% Chinese Blue and 90% Barytes with a little China Clay mixed with it. This is used for blending with light green or yellow for the purpose of matching paste or Dry Greens.

11033 is a Bronze Green Deep.

11034, 35 and 36 are the light, medium and deep shades of a very strong tinting Green about 30% pure, which were made to compete with Greens now on the market of great tinting strength.

12007 is a C. P. Chrome Yellow. It carries about 30% Lead Sulphate, 70% Lead Chromate.

N. 3. These Yellows are all Acetate Yellows and are of a different character and class to those made from Nitrate of Lead.

12008 is an Extra Lemon Shade of Chrome Yellow, lighter than 12007 and is made on the same formula, except that it is not washed, and has therefore, not turned to quite as full and rich a shade as 12007. On this account it is not suitable for an oil paint,

as in that vehicle it is apt to absorb sulphur from the air and turn dark. It is only made for Q. D. work and Printing inks. X

12009 is the L shade of Chrome Yellow and lies between 12007 and 12010. It carries about 20% Lead Sulphate, 80% Lead Chromate.

The 12010 is the straight Chrome Yellow, but carries not over 2 or 3% Lead Sulphate

N. B. Very often these shades are classed by other manufacturers as follows:

12007 is called Light; 12009 is called Medium and 12010 Deep.

12011 is the Orange Shade of Chrome Yellow and is chemically pure.

12012 is the Red or Deep Orange Shade Chrome Yellow and is also chemically pure.

12013, 14, 15 and 16 are respectively the Lemon, Light, Medium and Orange #1 Chrome Yellows. These are made for Trade Sales purposes and carry in the neighborhood of 33% pure Chrome Yellow.

12017, 18, 19 and 20 are respectively the Orange, Light and Medium and Deep Orange shades of Chrome Yellow carrying 75% pure Yellow and 25% Barium Sulphate. These are designed for Paste purposes.

12021 is #1 Chrome Yellow Deep Orange for Trade Sales purposes and carries about 30% pure Yellow.

Where the Vermilion is to be used for fine Q. D. work, we have found it advisable to grind the Orange Mineral as fine as possible before dyeing with color, as the particle of Orange Mineral which is thoroughly surrounded and coated with dye stuff will not act on the vehicle, but if that particle is broken up and the uncoated surface is exposed to the vehicle, action is liable to ensue.

We generally make one ton of Vermilion in a tub of about 800 gallons capacity. This tub is provided with a mechanical stirrer running about 20 revolutions to the minute. The base, which may be a mixture of Orange Mineral, Red Lead, White Lead, Lead Sulphate or Zinc, with such adulterants as Barytes, Whiting, China Clay, etc, is pulped into about half the tub full of water and stirred up until it is thoroughly distributed through the water. The Dye Stuff is then dissolved in a small quantity of water in a separate tub placed over the large one; heat is used if necessary in dissolving and when solution is complete, this is run into the large tub and thoroughly mixed up in the base.

In another small tub the Lead Nitrate, or other mordant, is then dissolved in the necessary amount of hot water, and is run slowly into the large tub. After all the mordant has run in, and stirring has been continued for about five or ten minutes, the color should be set fast on the base. If this has not been accomplished, either enough mordant has not been used, or the dye cannot be mordanted completely. This can be determined by trial.

In case of Eosines and Lead Nitrate, the condition of the water has something to do with it. A large amount of free salts in the water or in other words a hard water, necessitates the use of a larger quantity of mordant.

When Scarlet is used with the Eosine, this should be mordanted first on the base with Barium Chloride, then the Eosine, then the mordant after the Eosine. The reason for this is that the Scarlet is a dull color and rather opaque, and the Eosine is bright and transparent, so it is better to have the dull color underneath shining through the transparent. These Lead Eosine Colors do not need washing. The water should be drained off, the color pressed, dried and ground.

When Bromo Acid is used in place of Eosines, 51% of Bromo Acid is dissolved with 7 1/2% Dry Fused Caustic Soda (303). This takes the place of about 60 to 75% of native American Eosins.

10049 - SCARLET LAKE: Dissolve 186% of 217 (Scarlet 2 R, Badische Aniline & S. F. Co.) in about 400 gal. boiling water in the large 2000 gal. tub. To this add slowly 147% strong concentrated commercial Sulphuric Acid (16), stir and fill the tub three quarters full with cold water, stirring all the time; then add the solution of Barium Chloride.

To make this solution, dissolve 525% crystallized Barium Chloride in about a 400 gal. tub placed over the large tub. Steam must be used in dissolving this and when dissolved, run down into the large tub. Stirring should be continued for about ten to fifteen minutes.

This Lake contains a large percentage of free Muriatic Acid (121), and all metal connections for steam, etc, must be of brass. We wash this until the wash water does not turn Blue Litmus paper red. The usual number of washings is ten. The washing is done as follows:

Fill the tub with clean cold water, stir thoroughly, and allow to stand eight or ten hours. Then siphon the clear water down to the color, stop the siphoning, fill up with cold water and stir again.

MANUFACTURE OF LAKES SIMILAR TO 10096.

This Verrillion (Lake) is made with the least delay for washing, etc., large outputs are obtained from tub, and the color has proved very economical and satisfactory. It is, I believe, the most satisfactory Scarlet Lake formula that I know of.

200# of Dye Stuff are dissolved in 500 gals. in the 2000 gal. tub in hot water; then 200# of Alum (368) are dissolved in the 300 gal. tub with constant boiling, placed over the large tub. When solution is complete, this is run down into the dye stuff. Then in the same tub as was used for the Alum, 380# of Glauber Salts (317) are dissolved in about 300 gals. of hot water and when dissolved, run down into the large tub, which is being stirred constantly all the time. Then in another tub of about 400 gals. capacity, 600# of Barium Chloride (221) is dissolved with hot water and run down into the large tub. After this mixture has been stirred about fifteen minutes, 65# of Whiting is slowly shaken from a scoop into the tub. This must be done carefully and slowly, or the mass will foam up and run over the tub. When the whole 65# has been added and foaming has ceased, the tub may be filled with cold water, and filtration may be started at once. It is unnecessary to allow this to settle, simply start filtering at once. No washing is necessary.

On this formula may be made all the Lakes, with the exception of 10049 and those in which a bluer undertone is desired, when a little more Alum is used, otherwise the treatment is the same.

10091 - PARANITRANILINE RED.

In 1200 gals. cold water in the 2000 gal. tub pulp 400# Zinc Oxide and 3600# Barytes (306). This is stirred continuously during the whole operation. In an iron tank of about 400 gal. capacity, 125# Beta Naphthol (301) and 40# Dry Fused Caustic Soda (303) are dissolved together with about 300 gals. boiling water. The solution must be free from any white flaky precipitate when allowed to color in a small glass, and also must show no white flaky precipitate in dilution. If ordinary ground caustic soda is used, 50# should be used instead of 40. This solution is then run into the large tub and kept stirring with the base. The Paranitriline should be handled in a wooden tub of about 300 gals. capacity, which contains a wooden stirrer running at about 25 revolutions per minute. In this tub 121# Paranitriline (276) is placed, and to this is added 40 gals. of cold water. This is stirred until the mass is pulped and no dry lumps show. On to this pulp is poured 133# of strong Commercial Sulphuric Acid (18) and stirred until the mass shows a clear molasses color and no lumps are visible. This should get quite hot by the action of the acid on the water. To this is added slowly 100 gals. of cold water and the stirring continued vigorously when the Para will all be precipitated in a light flaky foam. 250# of broken ice is now added, and then a solution of 72# Sodium Nitrite (279) dissolved in 40 gals. cold water is run as rapidly as possible. The stirring must not be interrupted. This mixture should then stand twenty minutes and at the end of that time, should show a transparent liquid of a yellowish brown color. There should be no lumps of undissolved yellow present. At the end of twenty minutes, this liquid is run down into the large tub and the precipitation is complete. It is unnecessary to wash this. It may be allowed to settle and the water poured off and the color run into the filter press, or the whole batch, including the water, may be run into the filter press, whichever is desirable.

This method will apply to any Paranitriline colors except those which are pure, which have to be treated separately.

10078 - MAROON LAKE: In 1200 gals. of water in the large tub, pulp 1000# precipitated Dry Blue Pixe (213) and 1000# Whiting (16). In the iron tank dissolve 100# Beta Naphthol (301), 35# Dry Fused Caustic Soda (303) in about 200 gals. boiling water. Run this down into the large tub and stir thoroughly with base. In the small wooden tub, dissolve 57-1/4# Alphanaphthylamine Base (302S) in 144 gals. hot water. Run onto this 40# strong Commercial Muriatic Acid (121). Let this run for twenty minutes, then add 80# more (121) and 800# ice. Then add very slowly 30# Sodium Nitrite (279), which has been dissolved in 12 gal cold water. After stirring about twenty minutes, this solution should be a transparent and brown color, and is then ready to run into the large tub. This color should be filled the same as 10091.

10064 is made the same way as 10091, except that Sodium Nitrite solution should be run slowly into the Para instead of fast as in 10091.

10109 - ROYAL DUREAR, similar to the usual Pure Para Toners on the market.

1500 gals. cold water is put into the large precipitating tub with 10# Ammonia Alum (362) dissolved in water, and to this is added 12 $\frac{1}{2}$ # Soda-ash (370), dissolved in water and 12 $\frac{1}{2}$ # Whiting (16). These are all mixed together in the large tub with the 1500 gals. water. 71-1/4# Beta Naphthol (301) and 24-3/4# Caustic Soda (303) are dissolved together in the iron tub as usual in about 300 gals. water, and when solution is complete, run into the large tub. 75# of Paranitraniline (276) is dissolved in 20 gals. water and 82 $\frac{1}{2}$ # Sulphuric Acid (16) as usual 35 gals. water added, and is then diazotized with 250# of ice and 44 $\frac{1}{2}$ # Nitrite of Soda (279), dissolved in 20 gals. water. This addition of Sodium Nitrite should be made slowly. After stirring twenty minutes, this Para solution should be run into the large tub, when the color is ready to be filtered. After it has been filtered and all the water squeezed out, the cakes of color are taken upstairs and thrown into the large tub and stirred thoroughly with 1500 to 1800 gals. cold water. The filtration is then done over again and cakes dried. This is for the purpose of washing the material, as it is so flaky that it will not settle in water.

Sup. Instructions - 10109 -

Dissolve 10# 362 in hot water. Add to this 12 $\frac{1}{2}$ # of Whiting slowly so that it does not foam up and run over the sides of the barrel. This Whiting is to precipitate the Alum. This solution is then put in the striking tub. The 12 $\frac{1}{2}$ # of 370 is then dissolved in hot water and put in with the Alum and Whiting into the striking tub containing the 1500 gals. of cold water. This completes solution #1 which is kept constantly stirring.

Next prepare solution #2 by putting into an iron stirring tank with 300 gals. of water, 71-1/4# of 301, 24-3/4# of 303 and 6-1/4# of 364. This is boiled with live steam until clear. If not clear it is an indication that there is not enough of 303 and a trifle more should be added. When entirely completed solution #2 is run into a large tub with solution #1. During this time solution #3 should be prepared by first dissolving 75# of 276 in 20 gals. of cold water. No iron should be allowed to come in contact with this solution. The quantity of water is measured accurately by a barrel placed over the tank in which have been placed figures showing the height of 20 - 30 gals. etc of liquid. When this has become thoroughly dissolved add 82 $\frac{1}{2}$ # of (16), then 35 gals. of water measured accurately. It would be noticed that the color begins to assume a shade much browner than the bright yellow color of 276. Next should be added 250# of ice to reduce the temperature which was raised from the chemical action of the (16). While this has been going on 44 $\frac{1}{2}$ # of 279 should have been dissolved in exactly 20 gallons of cold water. When dissolved this should be added slowly to the solution of 276 and (16). Immediately the color will begin to get more brownish. It will foam considerably but after stirring twenty minutes it will become clear and assume a dull greenish look. This solution #3 is then run into the large stirring tank containing #2 and #1. It will immediately assume a brilliant red color. As soon as all of the solutions are mixed it is pumped through the filter press. The cakes are taken from the press, put into the stirring tub again and stirred thoroughly with 1500 to 1800 gals. of cold water. The color is then ready to be put through the filter press and dried.

10128 - NON-FADING GERANIUM LAKE: 743# of Alum (368) is dissolved in about 400 to 500 gals. water in a 500 gal. tub without stirring. When dissolved, this is run into the large tub and 233# Soda Ash (370) dissolved in about 300 gals. of water is added to it, and the whole diluted about 1800 gals. water with stirring. The white precipitate is allowed to settle and the liquid poured off, filled up with water again and in that way washed in this six times. After the six washings, the precipitate in about 1500 gals. water is left in the last tub, and to it is added 120# Pigment Scarlet 3 B (394), dissolved in 200 gals. cold water. 12# Commercial Formaldehyde is then added to the big tub and 120# of Barium Chloride dissolved in 150 gals. water is added to the whole thing. This should precipitate the color so that the mother liquid is almost clear. This is then run into the filter press without further washing and dried and ground.

Variations of this Lake can be made by substituting other bases for the precipitate mentioned above. The rest of the treatment would be the same.

This color is apparently the coming Red and will probably displace Paranitraniline and Eosine almost entirely.

MANUFACTURE OF GREENS

11001, French Crown Green Medium, is a Green 25% pure of medium yellowish shade.

150# of Yellow Prussiate of Potash (298) are dissolved in 200 gals. boiling water and run into a 2000 gal. tub. 150# of 314 (Green Vitriol) is then dissolved in 200 gals. boiling water, enough Sulphuric Acid (16) is added to clear the solution, and that is run into the 2000 gal. tub and stirred up thoroughly with the Yellow Prussiate solution. To this precipitate is added 113# Commercial Sulphuric Acid (16) with stirring, and then 17# Bichromate of Soda (293) dissolved in 10 gals. water is added and run in slowly, and the whole brought to a boil. Boiling is continued for half an hour and at the end of that time the blue is diluted with cold water to about 2000 gals. This is allowed to settle and washed until the wash-water shows no acid when tested with Litmus paper. The water is then siphoned off and the basic acetate of lead prepared in another tub is added to this blue solution.

This basic acetate of lead is made as follows:

In a 300 gal. tub 369# of finely ground Litharge is stirred up thoroughly with 70 gals. cold water. (In winter this water should be warmed slightly). To this is added 123# of 60% Acetic Acid (19), and stirring should be continued vigorously until the mass hardens into a white paste. This should be allowed to stand twenty-four hours before using and should be almost snow-white and about as stiff as ice cream. The tubs full of this are prepared for this batch of Green so that 738# of Litharge is taken and 246# of Acid (19). These are added to the blue, and 50# of Acetic Acid (19) is poured in and the whole stirred up together. Note small quantity of (19), also white paste.

In another 300 gal. tub 303# Bichromate of Soda (293) are dissolved in about 200 gals. water and 117# Concentrated Commercial Sulphuric Acid (16) is added to the Bichromate of Soda (293). This mixture is then run slowly into the last tub with vigorous stirring. To this is added 5120# Barytes (306), 300# China Clay (8) and the whole thing should make about 1800 gals. This is now run into the filter press without any further washing, filtered, dried and ground.

This formula is typical of all our Greens, except that for Pure Green no adulteration is used and the variation in depth of shade is produced by having more or less blue. If the shade gives too yellowish a color and a whiter bluer shade is desired, with the addition of dry blue it can be obtained as follows:

In order to blue the shade for each 5.85# Sodium Bichromate taken out, put in 4.4# Sulphuric Acid (16). In order to make the shade more yellow, for each 4.4# Sulphuric Acid out out, put in 5.85# Sodium Bichromate, 293.

BLUES

Made for pure blue from floating by making pure green & adding Barytes & China clay as full in a bag with full pure green 1946

11023 - CHINESE BLUE: Dissolve 300# Yellow Prussiate of Potash (298) in 400 gals. boiling water and run into 2000 gal. tub when dissolved. Dissolve 300# 314 (Green Vitriol) in 400 gals. boiling water, cleared with small amount Sulphuric Acid (16), and run into the large tub and stir thoroughly with the Yellow Prussiate. 225# Sulphuric Acid (16) is then run into the large tub and 34# Bichromate of Soda (293) dissolved in about 50 gals. water is run into the large tub and the whole brought to a boil and boiled for half an hour. The tub is then filled up with cold water and washing is carried on by siphoning until the liquid no longer turns Litmus paper. This blue is then filtered in the filter press, dried and ground.

11026 - PARIS GREEN: Dissolve 260# Soda Ash (370) in 150 gals. of water in a steam jacketed kettle (iron) containing iron stirrer. To this is added by the scoop, 440# White Arsenic (307) and the mixture is boiled with constant stirring for one hour. The steam entering this should be at about 30# pressure in order for the boiling to be thorough. This boiled mixture at the end of an hour, is run into a 2000 gal. tub, which contains exactly 800 gals. of cold water, and in a separate tub there has been dissolved 600# Blue Vitriol (318) in 350 gals. of water. This is run into the large tub and stirred for a few minutes. The stirrer is then shut off and 200# 60% Acetic Acid (19) is added from the barrel as quickly as possible, and when all the acid has been added, the stirrer is run for net ever one-half minute. The mass then shows a dirty olive green shade and must be left undisturbed for twenty-four hours. The full Paris Green shade should then have been developed and the mother liquor is then siphoned off and the green run into a filter cloth. This

material cannot be pressed in a filter press, as the crystals would be broken. It should run into a filter cloth stretched on any convenient filter rack. The liquor will drain off and the green mass should then be washed with cold water from a hose. When drained and dried again it should be scooped out and put into the dry room.

11021 - ULTRAMARINE BLUE SUBSTITUTE: 2000# China Clay (8) and 2000# Barytes (306) are pulped into about 1000 gals. water in a 2000 gal. tub. 100# Ultramarine Blue Substitute Dye (365) is then dissolved in about 100 gals. water and run into the large tub. Then 100# Alum (368) is dissolved in water and run into the big tub. Then 190# Glauber Salts (317) is dissolved in about 100 gals. water and run into the big tub. Then 300 gals. Barium Chloride (221) is dissolved in about 300 gals. water and run into the big tub. Then 51# Whiting (16) is shaken into the tub from a scoop very slowly, care being taken that it does not foam over. When all action is complete, 25# of Topping Blue (366) is dissolved in about 100 gals. water and run into the big tub. After stirring about fifteen minutes, the whole mass is then filtered without being washed, and dried and ground.

D - 464, or 11039 - ACID GREEN LAKE: The formula is as follows:

200# 313 (Acid Green "O") is dissolved in a small amount of water and run into the big tub. Then 400# Barium Chloride (221) is dissolved in about 200 gals. of water and run down onto the Green. Then the following materials are dissolved in the least possible amount of water one after another and run into the big tub separately in the order mentioned:

67# Tartar Emetic
67# Tannic Acid
10-1/4# Tin Crystals

The whole mass should then be stirred about half an hour and run into the filter cloth stretched on a filter rack. This color cannot be filtered in the filter press, and must not be washed. When drained, it should be dried in the dry room in the usual way. The mother liquor from this batch will show large quantities of green. That cannot be avoided.

10132 - ALIZARINE LAKE or D - 447: Dissolve 147# Sodium Phosphate (380) in 369 gals. water, and when solution is complete, run into the large tub. Then dissolve 44-1/4# Soda-Ash (370) in 62 gals. hot water and run into the large tub. Add 49# Turkey Red Oil (235) to the large tub. Then see that the liquid in the tub is about 500 gals. In a separate tub, dissolve 125# Alizarine Red Paste I. T. (379) in about 100 gals. warm water and stir thoroughly and run into the large tub, which should be stirred thoroughly during the operation. After some minutes of stirring, add very slowly 246# of Alum (368) dissolved in about 500 gals. warm water (which solution should be allowed to stand until cold). The solution in the large tank should stand until that is also cool. Then add 14# Calcium Acetate dissolved in about 50 gals. cold water. When all these things have been added to the large tub, the solution should be raised to a boil slowly during the time of one-half hour and then boiled gently for one and one-half hours. It should then be washed five or six times. Great care should be taken throughout this whole operation to prevent any iron getting into the solution, either from the chemicals, from the stirring machinery or from the pipes. The slightest trace of iron will turn the color to a purple or violet shade. If Acetate of Lime free from iron cannot be obtained, then it can be made as follows:

Select 5# of unslacked lime that is free from iron, slake it and add 18# 60% Acetic Acid (119) in about 60 gals. water. Care should be taken to select an Alum that is free from iron.

This color should not be filtered in an iron filter press, but in a wooden filter rack. Then dry and grind in the regular way.

MANUFACTURE OF L.L. CHROME YELLOW - 12007 (57 LL)

738# of finely ground Litharge (48) and 246# 60% Acetic Acid (119) are made into basic acetate of lead, as described in the manufacture of 11001. When white and stiff, this material is shoveled into a 2000 gal. tub and stirred up with about 1500 gals. water. In a 300# gal. tub, 302# Bichromate of Soda (293) is dissolved in water and 116-3/4# Sulphuric Acid (16) is added, and this solution is run slowly into the large tub with constant stirring. After thoroughly stirring, this should be allowed to settle and washed four times. Care should be taken that the wash-water is not alkaline. If it shows at all alkaline, this should be corrected with Acetic Acid (119). After four washings, the color should be filtered, dried and ground. Filtering can be done in the regular filter press. The drying should not be done at over 150 degrees, if air drying is used. In the mother liquor there should be no excess either way of lead or chromate. This color is quite hard to grind, but we have succeeded in grinding it in the small Raymond mill with constant poking and hammering.

12008 - LEMON CHROME YELLOW (59) This is made in identically the same way as 12007, and on the same formula, except that the color is filtered and pressed immediately after striking and is not washed at all.

12009 - CHROME YELLOW M - (57 L) This is made in the same general way as 12007 except that the following formula is used:

738#	48
246#	(119)
365#	293
76#	(16)

12010 - MEDIUM CHROME YELLOW - (57 M) This is made on the same general directions as for 12007, with the following additions:

369#	48
123#	(119)
240#	Bichromate of Soda (293)
51#	(16)

The last item of 51# Acetic Acid can be put either with the Chromate or with the Lead in the big tub. Care should be taken that a slight excess of Chrome is found in the liquor after the precipitation is made. This can be tested for by filtering the liquor and adding a little lead to the clear solution. If a slight yellow cloudiness forms, the batch is alright. This should be washed and dried in the usual way. The reason for this batch being so small is that it is the largest amount that can be made in a 2000 gal. tub in such a way as to get a good clear shade.

12011 - ORANGE CHROME YELLOW - (57O) 738# Litharge 48 - 246# Acetic Acid (119) are made into basic acetate of lead, as usual and dissolved in a 2000 gal. tub in about 1200 gals. water. 325# Bichromate of Soda (293) are dissolved in about 250 gals. boiling water. The lead in the big tub should be brought to a boil with live steam and kept boiling while the boiling solution of 293 is run slowly into it. 15# of Quick Lime slacked in 25 gals. hot water and boiled fine should be run into the big tub, (preferably through a fine sieve), and the boiling continued until the desired shade is reached. This is washed, filtered, dried and ground in the usual way.

12012 - DEEP ORANGE CHROME YELLOW - (58) 738# Litharge 48 - 246# (119) Acetic Acid are made into basic acetate of lead, as usual, and dissolved in about 1200 gals. water in the large tub and brought to a boil. 325# Bichromate of Soda (293) are dissolved in about 250 gals. boiling water and run into the boiling solution of lead. 70# of Lime slacked in hot water and 40# Soda-Ash (370) are then run into the large tub and boiling continued until shade is reached. The batch is then washed with cold water until free from alkaline. It can be filtered, dried and ground in the usual way.

The Adulterated Chrome Yellows are made in the same way as the above, except that after striking, the right amount of adulteration is added to the batch.

PREVENTION OF LEAD POISONING IN DRY COLOR WORKS

Wherever possible, absolute cleanliness is the first requisite. Good suction for the collection of dust should be piped to all places where large amounts of dust are made. The men should be compelled to wear muzzles wherever their work is very dusty. This respirator is called "Cover's Automatic Patent Respirator". Each man should be provided the first time he works, with two clean suits of white overalls. At the end of his first day, the outer suit goes to the Laundry, the inner suit to be worn outside the next day and a clean one inside. In this way one suit of overalls per day keeps a man with two suits on him.

The washing of these overalls need not be very fine, but must be thorough enough to get all the lead out. They do not need to be made perfectly white.

Each man should be made to take a shower bath, for which we allow fifteen minutes time, before leaving at night, and should be obliged to wash his hands and face before meal time at noon. No food should be allowed to be eaten within the range of dirt.

In case of symptoms of Lead Poisoning, which are first shown by pains in the stomach and blue lines around the gums, the free use of powdered licorice should be employed until the bowels are in good shape, and simultaneously with that the man should be treated with potassium iodide, 4 grains to the dose in about one-half tumbler of water given twice a day, morning and evening. This is for mild cases. Anything serious should be immediately turned over to a physician, and it is advisable to have periodical inspections by a competent physician.

We have found it advisable to provide the men with large gauntlet gloves, which last from six weeks to two months, according to the work, and which cost \$1.00 per pair. These have great influence in preventing lead poisoning, as much lead can enter the system through the finger nails. The general principles on which we have worked is that more lead enters the system by being converted into soluble lead salt by the perspiration than that which enters through the breathing apparatus, so that if we keep the skin and hands clean, there is little danger.

GENERAL DATA DRY COLOR DEPARTMENT OUTPUT.

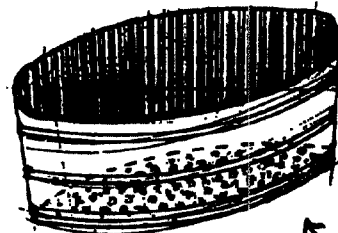
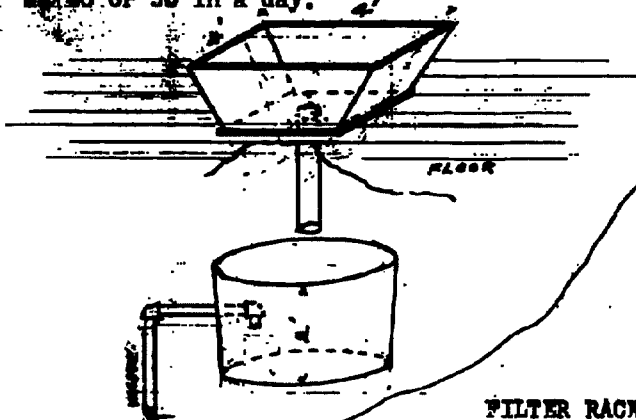
During the year of 1904 for an output of 2,946,000#, equivalent to 4,034,000 units, this department employed -

- 1 Foreman
- 1 Department Clerk
- 18 Productive Workmen
- 1 Elevator Man
- 1 Night Watchman
- 1 Chemist
- 2 Laboratory Assistants
- 2 Clerks
- 1 Office Boy
- 1 Superintendent

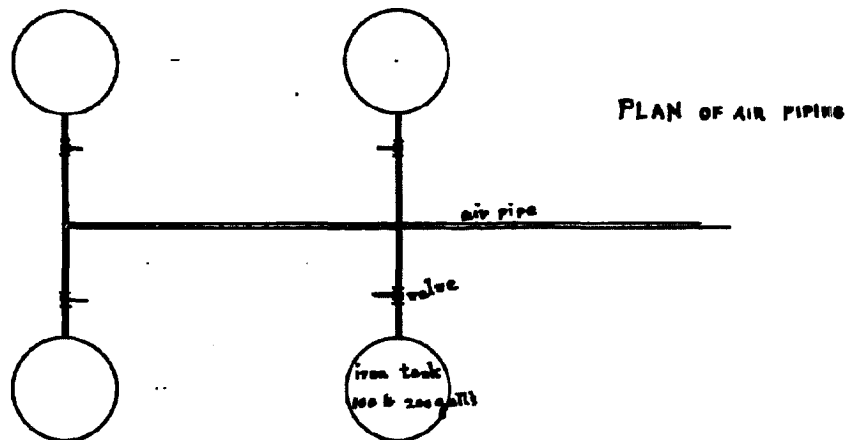
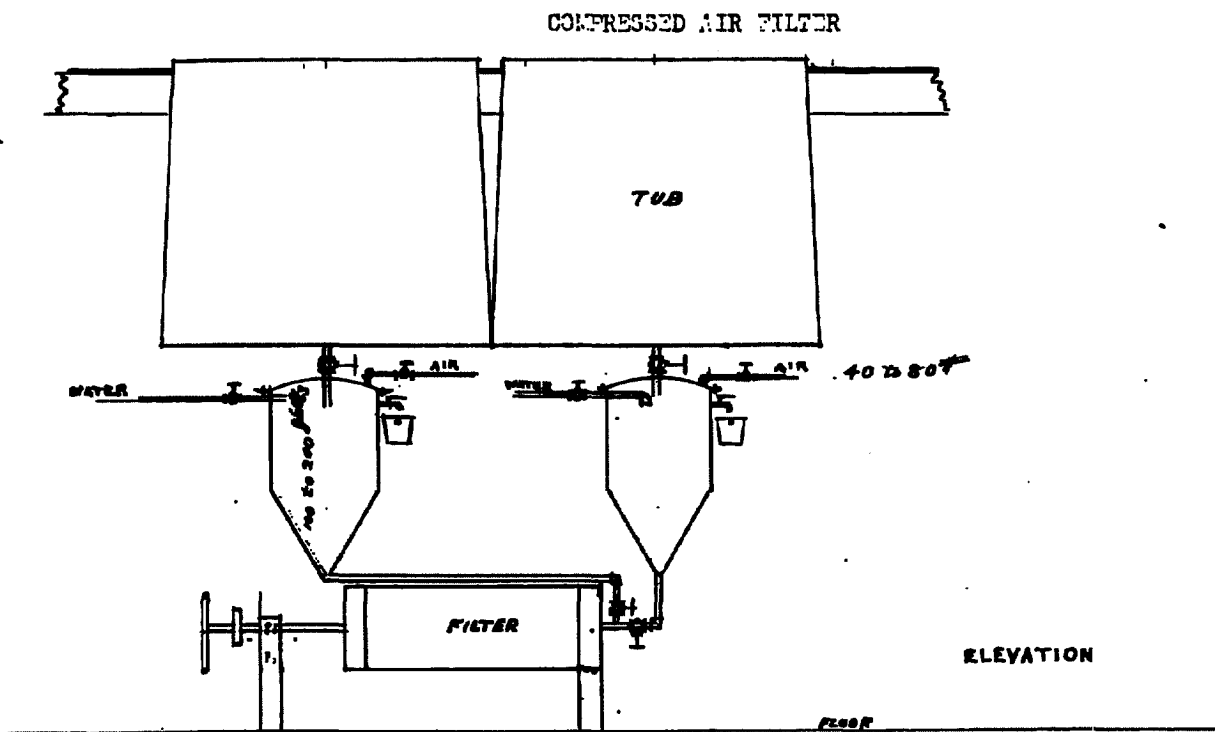
The average daily output per productive workman was 754 units per day. The rate of pay is 17¢ per hour at starting. After a month or six weeks this rate is increased to 20¢ per hour if the workman develops satisfactorily. As his work is improved the rate is increased to 22½¢ per hour which is the limit for common labor. The men who have worked up to positions of greater responsibility - practically sub-foremen - earn 27½¢ and the foreman of the department earns \$100.00 per month.

BARREL CLEANING

A hopper is set in the floor above a tub with a capacity of about 300 gallons which is connected with the sewer at a point of about a foot above the bottom so that after the liquid has been drawn off the paste can be shoveled out. In cleaning the barrels an ordinary 1" hose with a small nozzle is used. The barrel is up-ended in this hopper and with this strong stream of water all of the dry color is washed from the inside of the barrel. The barrel is not allowed to get any wetter than is absolutely necessary and it is then allowed to dry over night. With this method it is possible to clean any barrel at a cost of 5¢ or 6¢ per barrel and one man can clean as many as 40 or 50 in a day.



This filter rack is a shallow tub about 4' high and 10' in diameter with cleats 2" x 2" set about 2" apart all around the sides and bottom. In the bottom is drilled a number of ½" holes. Below the tub the filter is so constructed that all of the water will drain to one central point. In using this filter rack a cloth large enough to cover the bottom and sides is put into the rack or tub and the material is then run in. The water runs away and the paste is thus easily collected in the cloth.



Any Color Bldg - Striking floor to have not more than 20 to 25% occupied by tank.
 1st floor to striking floor at least 15 ft.

10049.

Dissolve 200 lbs of #217 in a 500 gallon tub with 300 gallons of water with steam. Then fill up with cold water and run in a 2000 gallon striking vat; then put 200 lbs #368 in same tub with 300 gallons of water and steam. When #368 is all dissolved shovel in 380 lbs #317. When this is dissolved fill up with cold water and run in striking vat.

Then dissolve 600 lbs of #221 in same tub using as little water as possible. When this is all dissolved fill up with cold water and run in striking vat. When this is all down add slowly 65 lbs of #16 to the above in striking vat. After the #16 has done all of its work dissolve 6 lbs #347 in a barrel and run in striking vat; then dissolve 12 lbs #221 in a barrel and run in striking vat; then press and dry.

Product--660 lbs.

200 lbs----#217.

200 lbs----#368.

380 lbs----#317.

600 lbs----#221.

65 lbs-----#16.

6 lbs-----#347.

12 lbs-----#221.

The instructions on 10049 will apply on 10096-10113-10120-10122-10126 10129 and 10066, except that 10122 & 10126 the two dyes are dissolved together and 10129 the #317 is left out.

10096. Product is 725 lbs.
200 lbs----#321.
200 lbs----#368.
380 lbs----#317. ✓
600 lbs----#221.
65 lbs-----#16.

10113. Product is 725 lbs.
200 lbs----#317.
308 lbs----#368.
318 lbs----#317.
581 lbs----#221. ✓
100 lbs-----#16.

10120. Product 725 lbs.

200 lbs-----#367.

200 lbs-----#368.

380 lbs-----#317.

600 lbs-----#221.

65 lbs-----#16.

10122. Product 775 lbs.

322 lbs-----#217.

46 lbs-----#394.

184 lbs-----#368.

380 lbs-----#317.

644 lbs-----#221.

60 lbs-----#16.

1 Dissolve together.

10126. Product 1235 lbs.

125 lbs-----#347.

75 lbs-----#378.

306 lbs-----#368.

318 lbs-----#317.

581 lbs-----#221.

600 lbs-----#16.

2 Dissolve together.

10129. Product 315 lbs.

200 lbs-----#386.

200 lbs-----#368.

310 lbs-----#221.

67 lbs-----#16.

10068. Product 725 lbs.

200 lbs-----#285.

200 lbs-----#368.

380 lbs-----#317.

600 lbs-----#221.

65 lbs-----#16.

10133.

Dissolve 425 lbs of Filtered Alum in a 500 gallon tub with 400 gallons of water with steam; run down in a 2000 gallon striking vat. Then put 210 lbs of #370 in same tub in 300 gallons of water with steam; run down in striking vat. Wash three times.

Then add 55 lbs of 12011, then add 195 lbs of #53, then add 155 lbs of #112.

Then dissolve 100 lbs of #394 in a 500 gallon tub containing 300 gallons of water with steam; run down in striking vat; then add 10 lbs of Formaldehyde; then dissolve in the same tub 250 lbs of #221; run down and press and dry.

Product-----721 lbs.

425 lbs-----Filtered Alum.

210 lbs-----#370.

100 lbs-----#394.

10 lbs-----Formaldehyde.

55 lbs-----12011.

195 lbs-----#53.

155 lbs-----#112.

250 lbs-----#221.

(127).

Dissolve in a 150 gallon wooden tub 300 lbs of #314 with 125 gallons of water with steam; then make up to 150 gallons; let stand over night.

Dissolve in a 150 gallon wooden tub 300 lbs of #298 with 125 gallons of water with steam; then make up to 150 gallons and let stand over night.

The next morning run 650 gallons of water in a 1000 gallon iron kettle; then run down the #314 solution then the #298 solution. Then start fire and bring to a boil in three to four hours and boil for four hours. Make up four batches like this and pump them over in a 12000 gallon vat. Then run in 180 lbs of (16) stir thoroughly then run in iron solution and stir thoroughly; then fill up with water and wash six times. When free from iron pump in a 4000 gallon vat and make up to 4000 gallons.

This instruction will apply on 11022 except that after it is washed press and dry.

Iron Solution.

Dissolve 150 lbs of iron in a 500 gallon wooden tub in 1200 lbs of (121) after the iron is all gone oxidize the iron solution with 230 lbs of (134).

(127).	Product 4000 gals.	11022.	Product 1076 lbs.
1200 lbs----	#298.	1200 lbs----	#298.
1200 lbs----	#314.	1200 lbs----	#314.
1200 lbs----	(121). ✓	1200 lbs----	(121). ✓
150 lbs-----	Iron.	150 lbs-----	Iron.
230 lbs-----	(134).	230 lbs-----	(134).
180 lbs-----	(16).	180 lbs-----	(16).

(128).

Run in 560 lbs of water in tub of about 125 gallon capacity. Then add 369 lbs of #48; then stir vigorously at the same time add 123 lbs (119). Keep stirring vigorously till the batch gets quite stiff; then let stand for forty-eight hours before using.

Product 369lbs.

560 lbs. water.

369 lbs #48. ✓

123 lbs (119).

v

10004.

Dissolve in 25 gallons of water with steam 32 lbs of #68. When all is dissolved run in striking vat containing 100 gallons of hot water. Stir at about 45 revolutions of a minute; then shovel in 870 lbs of #53 and 130 lbs of #9.

Dissolve 32 lbs of #211 in 25 gallons of water with steam. When all is dissolved run in on the above press and dry.

The above instructions will apply on all of the Rosine Vermillions.

Such as the following:

10007-10020-10031-10032-10033-10034-10036-10041
10050-10056-10059-10060-10061-10062-10063-10068-10069-10070-10071-
10080-10086.

Product--1020 lbs.

32 lbs---#68.

870 lbs---#53. /

130 lbs---#9.

32 lbs---#211.

10131.

Shovel into a 300 gallon wooden tub 78 lbs of #302; then add 20 gallons of cold water and start stirring; mix thoroughly. Run in 40 lbs of (16) stir five minutes; then run in 50 gallons of cold water; then 250 lbs of ice. Dissolve in a barrel 28 lbs of #279 in 20 gallons of cold water, run into the above through a 3/4 inch stream. Stir for fifteen minutes; then run in large striking vat containing 1000 gallons of cold water. Dissolve in a 500 gallon iron tank 100 lbs of #301 and 45 lbs of #303 in 250 gallons of water with steam. When all is dissolved fill up to 500 gallons with cold water; then run in large vat and press and dry.

10131. Product 124 lbs.

78 lbs-----#302--20 gallons of water.

40 lbs----- (16)--50 gallons of water.

28 lbs-----#279--20 gallons of water. ✓

100 lbs----#301.

45 lbs-----#303.

250 lbs ---Ice.

10064.

1. Dissolve together in a 500 gallon iron tank in 300 gallons of water with steam 71 1/2 lbs of #301, 3 3/4 lbs of #364, and 30 lbs of #303 powered. When all is dissolved run in 100 lbs of #278; stir till all is run down in striking vat.

2. Shovel into a 300 gallon wooden tub 72 1/2 lbs of #276 then run in 20 gallons of water; then start stirrer when thoroughly mixed; then run in 160 lbs (121). Stir for five minutes before running in the water; then run in 35 gallons of water then add 250 lbs of ice. When the ice is all in run in the #279 solution which should be made up in a barrel with one inch plug in bottom that can be pulled out.

Dissolve 41 lbs of #279 in 20 gallons of cold water run in the 2000 gallon striking vat 1000 gallons of cold water then run down the #1. solution. Then shovel in 2000 lbs of #16; then run down the #2 solution. The #2 solution should stir for fifteen minutes after the #279 solution is all in.

These instructions will apply on the following rexes: 10109 & 10125.

10109. Product 185 lbs.

72 lbs----#301.
3 lbs----#364.
30 lbs----#303.
100 lbs----#278.
25 lbs----#276.
72 1/2 lbs #276-20 gal. water.
160 lbs---(121)-35 gal. water.
41 1/4 lbs #279-20 gal. water.
250 lbs---Ice.

10064. Product 2150 lbs.

71 1/2 lbs----#301.
3 3/4 lbs---#364.
30 lbs----#303.
100 lbs---#278.
2000 lbs---#16.
72 1/2 lbs #276-20 gal. water.
160 lbs (121)- 35 gal. water.
41 lbs #279-20 gal. water.
250 lbs---Ice.

10125.

Product 1500 lbs.

142 lbs---#301.
8 lbs-----#364.
50 lbs---#303.
145 lbs---#276---40 gal water.
320 lbs---(121)--70 gal water.
80 lbs---#279---40 gal water.
500 lbs---Ice.

Base

20 lbs---#368, Dissolve and run in striking vat.
300 lbs---Fenolith.
250 lbs---#20.
250 lbs---#306.
400 lbs---#16.

10135.

Product 4320 lbs.

137 1/2 lbs---#301, dissolve and run in large vat
containing 1000 gallons of cold
55 lbs---#303. water.
500 lbs---#112. Shovel in the #112 first.
300 lbs---#8. Then the #8.
1900 lbs---#306. Then the #306.
300 lbs---#16. Then the #16.
133 lbs---#276---40 gal water.
146 lbs---(16)--100 gal water.
79 lbs---#279---40 gal water.
300 lbs---Ice.

After this is all struck then add 1000 lbs Cream Ochre , press and dry.

10091-10130-10135 should be made on the same instructions as 10064.

10091.

Product 4270 lbs.

125 lbs---#301, Dissolve and run in large vat cont
taining 1000 gallons of cold water.
50 lbs---#303
400 lbs---#112. Shovel in the #112 first then the
3600 lbs---#306. #306.
121 lbs---#276---40 gal water.
133 lbs---(16)--100 gal water.
72 lbs---#279---40 gal water.
250 lbs --Ice.

10130.

Product 4270 lbs.

11 1/2 lbs---#301 Dissolve and run in large vat
6 1/2 lbs---#364 containing 1000 gallons of cold
50 lbs---#303 water.
100 lbs---#278.

10130 Cont'd.

400 lbs-----#112. Shovel in the #112 first
3600 lbs-----#306. Then the #306.
121 lbs-----#276--40 gal water.
133 lbs----- (16)--100 gal water.
72 lbs-----#279--40 gal water.
250 lbs -----Ice.

10132.

The same instructions as 10064.

Product 180 lbs.

72 1/2 lbs-----#27--20 gal water.
158 lbs----- (121)--35 gal water.
41 1/4 lbs-----#272--20 gal water.
250 lbs -----Ice.

75 lbs-----#301
30 lbs-----#303
50 lbs-----#278

} Dissolve and run in large vat con-
taining 1000 gallons of cold water.

12004.

Dissolve in a 500 gallon tub 280 lbs of #293 in 200 gallons of water with steam. Then fill up with cold water; then run into a 2000 gallon striking vat containing 600 gallons of cold water. Then pulp 140 lbs of #16 and run in striking vat. Then dissolve in a 500 gallon tub 748 lbs of #211 in 200 gallons of water with steam. Fill up and run down into striking vat. After the #16 is in fill striking vat up to within 600 gallons of the top. Then run down the #211. Then dissolve 7 lbs of Tartaric Acid in as little hot water as possible; then cool off and run in striking vat. When all is in let stirrer run for 30 minutes. Then stop and let settle till next morning; syphon off and fill up with cold water. Wash 4 times. Press and dry.

Product---700 lbs.

280 lbs.-----#293.

140 lbs.-----#16.

748 lbs.-----#211.

7 lbs.-----Tartaric Acid.

12806.

Dissolve 440 lbs #211 in a 500 gallon tub with 300 gallons of water with steam, run into 2000 gallon striking vat containing 600 gallons of hot water.

Dissolve 110 lbs #293 in a 500 gallon tub in 300 gallons of water with steam; then shovel in 37 lbs of #370 slowly. After the #370 is all in bring to a boil run into striking vat.

Slack 90 lbs of Lime in a barrel and run into striking vat; then boil for forty-five minutes; then fill up and let stand till next morning, syphon and fill up with cold water. Wash four times.

Product---420 lbs.

440 lbs.----#211.

110 lbs-----#293.

37 lbs.-----#370.

90 lbs.-----Lime.

1000/1670

1670/10000/60

10000/60

1400
1700

12008.

Shovel into 2000 gallon striking vat containing 100 gallons of cold water 738 lbs (128). Keep stirrer in motion all the time; when the (128) is all in fill the vat up to within 300 gallons of the top. Dissolve 181 lbs of #293 in 200 gallons of cold water in a 300 gallon tub. When the #293 is all dissolved run in 187 lbs (16) then fill up and run down in striking vat on top of the (128). Wash four times. Press and dry.

The 300 gallon tub should have a hole about 1 1/2 inch with plug, when ready to run in striking vat pull plug and let run fast.

The instructions for 12008 will apply on 12007-12009-12018 and 12019.

12008. Product 1025 lbs.

738 lbs---(128).

302 lbs---#293. ✓

116 3/4 lbs (16).

12009. Product 1040 lbs.

738 lbs---(128).

361 lbs---#293. ✓

81 lbs---(16).

12008. Product 952 lbs.

738 lbs---(128).

181 lbs---#293. ✓

187 lbs--- (16).

12018. Product 1335 lbs.

738 lbs---(128).

361 lbs---#293.

81 lbs---(16).

335 lbs---#306.

12019. Product 1345 lbs.

738 lbs---(128).

370 3/4 lbs---#293.

73 1/2 lbs---(16). ✓

335 lbs---#306.

The #306 in 12018 and 12019 is shovelled in after the #293 solution is run down.

Handwritten calculations:
116 3/4 + 302 = 418 3/4
418 3/4 + 81 = 499 3/4
499 3/4 + 738 = 1237 3/4
1237 3/4 + 335 = 1572 3/4
1572 3/4 + 81 = 1653 3/4
1653 3/4 + 361 = 2014 3/4
2014 3/4 + 738 = 2752 3/4
2752 3/4 + 370 3/4 = 3123 1/4
3123 1/4 + 73 1/2 = 3196 3/4
3196 3/4 + 335 = 3531 3/4

12010.

Shovel in 738 lbs of (128) in a 2000 gallon vat containing 100 gallons of cold water. Then make up to the 400 gallons with cold water. Then add 150 lbs (121); then fill up to within 300 gallons of top of vat with cold water. Then run down the #293 solution slowly taking one hour.

#293 Solution.

Dissolve 463 lbs of #293 in 300 gallons of cold water. Wash six times.

12010. Product 1050 lbs.

738 lbs----- (128).

463 lbs----- #293. ✓

150 lbs----- (121).

12011.

Shovel in 738 lbs of (128) into a 2000 gallon striking vat containing 200 gallons of water. After the (128) is all in bring to a boil. Then run in the #293 solution; then the lime solution; then boil for forty-five minutes. Fill up and wash twice. Press and dry.

#293 Solution.

Dissolve 325 lbs of #293 in 250 gallons of water with steam in a 300 gallon tub. Bring to a boil. Tub should have a 1 1/2 inch hole in bottom with plug. Pull plug and let the solution run in lively.

Lime Solution.

Slack 20 lbs of lime in a barrel then add 20 gallons of water; then run in striking vat.

These instructions will apply on 12017 except after it is boiled you will add the 306.

12011. Product 960 lbs.

738 lbs----- (128).

325 lbs----- #293. ✓

20 lbs----- Lime.

12017. Product 1315 lbs.

738 lbs----- (128). ✓

325 lbs----- #293.

25 lbs----- Lime.

335 lbs----- #306.

12012.

Shovel in 738 lbs (128) in a 2000 gallon striking vat containing 200 gallons of water; after the (128) is all in bring to a boil. Then add the #293 and #370 solutions then boil for forty-five minutes. Then wash till it is free from alkali; then add the #68 solution then the #211 solution. Press and dry.

#293 and #370 Solutions.

Dissolve 325 lbs of #293 in 200 gallons of water with steam; bring to a boil. Then shovel in 107 lbs of #370 slowly. After the 370 is all dissolved run in striking vat.

#68 Solution.

Dissolve 5 lbs of #68 in a barrel containing 10 gallons of water with steam.

#211 Solution.

Dissolve 5 lbs of #211 in a barrel containing 10 gallons of water with steam.

These instructions will apply on 12020 except that the #306 is shovelled in after the batch has its proper boiling.

12012. Product 871 lbs.

738 lbs----- (128).

325 lbs----- #293.

107 lbs----- #370.

5 lbs----- #68.

5 lbs----- #211.

12020. Product 1206.1bs.

738 lbs----- (128)

325 lbs----- #293.

107 lbs----- #370.

335 lbs----- #306.

10 lbs----- #68.

20 lbs----- #211.

11000.

Shovel in 369 lbs of (128) in the 2000 gallon striking vat containing 200 gallons of cold water. After the (128) is all in run in the #293 solution; then the Tartaric Acid solution; then the (127) solution: then add 1700 lbs #306: then 170 lbs #8. Keep stirring for 30 minutes: then let stand until the next morning. Syphon off and press.

#293 Solution.

Dissolve 181 lbs #293 in 250 gallons of cold water in a 300 gallon tub. Then add to the #293 37 lbs (16) run down in striking vat with 1 1/2" stream.

The blue is run in lively. These instructions will apply on 11001-11002-11003-11004-11005-11013-11014-11015-11018-11019 and 11020.

11000 Product 2390 lbs.
369 lbs----- (128).
181 lbs----- #293.
37 lbs----- (16).
1700 lbs----- #306. ✓
170 lbs----- #8.
9 lbs----- Tartaric acid.
200 gal----- (127)

11001. Product 2520 lbs.
369 lbs----- (128).
181 lbs----- #293.
37 lbs----- (16).
200 lbs----- #8.
1700 lbs----- #306.
9 lbs----- Tartaric acid.
400 gal----- (127).

11002. Product 2750 lbs.
369 lbs----- (128).
181 lbs----- #293.
31 lbs----- (16).
200 lbs----- #8.
1800 lbs----- #306.
9 lbs ----- Tartaric acid.
800 gal----- (127).

11003. Product 4210 lbs.
369 lbs----- (128).
181 lbs----- #293.
37 lbs----- (16).
3110 lbs----- #306.
690 lbs----- #8.
9 lbs----- Tartaric Acid.
175 gal----- (127).

11004. Product 4673 lbs.
369 lbs----- (128).
181 lbs----- #293.
37 lbs----- (16).
3360 lbs----- #306.
790 lbs----- #8.
3 lbs----- Tartaric acid.
425 gal----- (127).

11013. Product 2450 lbs.
369 lbs----- (128).
181 lbs----- #293.
37 lbs----- (16).
225 lbs----- #8.
2050 lbs----- #306.
3 lbs----- Tartaric acid.
150 gal----- (127).

11015. Product 325 lbs.
369 lbs----- (128).
181 lbs----- #293.
37 lbs----- (16).
2250 lbs----- #306.
500 lbs----- #8.
9 lbs----- Tartaric acid.
1000 gal ----- (127).

11019. Product 1250 lbs.
369 lbs----- (128).
175 lbs----- #293.
41 1/2 lbs----- (16).
650 lbs----- #306.
9 lbs----- Tartaric Acid.
400 gal----- (127).

11009. Product 5200 lbs.
369 lbs----- (128).
181 lbs----- #293.
37 lbs----- (16).
3610 lbs----- #306. ✓
890 lbs----- #8.
3 lbs----- Tartaric acid.
800 gal----- (127).

11014. Product 2930 lbs.
369 lbs----- (128).
181 lbs----- #293.
37 lbs----- (16).
225 lbs----- #8.
2150 lbs----- #306.
9 lbs----- Tartaric Acid.
500 gal----- (127).

11016. Product 1200 lbs.
369 lbs----- (128).
175 lbs----- #293.
41 1/2 lbs----- (16).
600 lbs----- #306.
9 lbs----- Tartaric Acid.
40 gal----- (127).

11025. Product 1350.
369 lbs----- (128).
175 lbs----- #293.
41 lbs----- (16).
700 lbs----- #306.
9 lbs----- Tartaric Acid.
1200 gal----- (127).

11023.

Dissolve 300 lbs of #298 in a wooden tub containing 200 gallons of water with steam; when all is dissolved run down in a 2000 gallon striking vat containing 200 gallons of boiling water. Then dissolve 270 lbs of #314 in a wooden tub containing 200 gallons of water with steam; when the #314 is dissolved add 5 lbs of #396; when dissolved run down in striking vat; then boil for twenty minutes; then run in 150 lbs of (16) then add the #293 solution and boil for twenty minutes; then fill up and wash five times.

293 Solution.

40 lbs of #293 dissolved in 100 gallons of boiling water.

Product ----250 lbs.

300 lbs-----#298.

270 lbs-----#314.

150 lbs----- (16).

5 lbs-----#396.

40 lbs-----#293.

11026.

Dissolve in a steam jacket kettle, containing 150 gallons of water, 779 lbs of #307 and 480 lbs of #370. Bring to a boil; boil for one hour; then cool to 75°e by making up to 300 gallons.

318 Solution.

Dissolve 1120 lbs of 318 in a 500 gallon tub containing 400 gallons of water with steam. When all is dissolved make up to 500 gallons at 70°e.

Run in a 2000 gallon striking vat 70 gallons of cold water then run down the #318 solution; then the #307 and #370 solutions. Have a tub containing 200 gallons of water at 75°e so as to run down at the same time as the #307 and #370 solutions. Stir for five minutes. After the #307 and #370 solution is all down stop stirrer and run in 280 lbs of (119). Let stand for one hour then stir for fifteen minutes; let stand for thirty minutes then stir for fifteen minutes; let stand for thirty minutes then stir for fifteen minutes; let stand for thirty minutes then stir for fifteen minutes; then let stand over night. Syphon off and run in filter trough and wash during the day.

Product 1040 lbs.

1120 lbs----#318.

779 lbs-----#307. ✓

480 lbs-----#370.

280 lbs----- (119).

10128.

Dissolve 743 lbs of #368 in a 500 gallon tub containing 400 gallons of water with steam; run down in a 2000 gallon striking vat. Then dissolve 232 lbs of #370 in the same tub with 350 gallons of water with steam; run down in striking vat; then fill up, and wash five times.

Then dissolve 120 lbs of #394 in a 500 gallon tub with 300 gallons of water with steam; run down on the #368 and #370 then add 12 lbs of Formaldehyde. Then dissolve 120 lbs of #221 in a 300 gallons of water and run down in striking vat. Press and dry.

Product-----310 lbs.
743 lbs-----#368.
232 lbs-----#370.
120 lbs-----#394.
12 lbs-----Formaldehyde.
120 lbs-----#221.

W. G.
13 APR 1908

W. G.
APR 13 1908

Our match for International Non Fading Red is IOI27 and is made as follows-

(1) In an iron kettle dissolve the following amounts in 200 gallons of water with steam- 72 lbs. Beta Naphthol, 3 lbs. of Mono Acid, 30 lbs. Caustic Soda (powdered) 12 lbs. of Para Oil, stir these thoroughly.

(2) In a 300 gallon wooden tub shovel in 72 lbs. Paranatraniline mix thoroughly in 20 gallons of water, add to this 41 lbs. Sulphuric Acid, stir for 3 minutes, then add 50 gallons of water then 300 lbs. of ice. In a barrel dissolve 41 lbs. of Nitrite of Soda in 20 gallons of water, run this in on the Paranatraniline solution through a 1 1/2" hole, keep stirring for 15 minutes.

(3) In a 2000 gallon vat run in 1500 gallons of U.S. standard cold water, then shovel in 200 lbs. of Oxide of Zinc and run down into this the Beta Naphthol solution. Then shovel in 1800 lbs. of Whiting, 2000 lbs. Barytes. Then strike your Paranatraniline solution on this after it has been diasatized thoroughly. Then bring the batch to a boil. Filter press and dry.

The No. 25 Light Gravity Green is made as follows-

Make up 92 1/4 lbs. of Litharge in 17 1/2 gallons of water and 30 3/4 lbs. of Acetic Acid (60 per cent) into a basic acetate lead, stir until all is taken up in a pulforn, let stand 48 hours. Then shovel this into 500 gallons of water in a 2000 gallon vat. Dissolve 47 lbs. of Bichromate of Soda in 100 gallons of water add to the Bichromate of Soda solution 8 lbs. of Sulphuric Acid run this down on the lead solution in striking tub, then dissolve up 3/4 of a lb. of Tartaric acid and run this in the striking tub. Shovel in 1562 lbs. of Barytes, 437 lbs. China Clay, then add 37 1/2 lbs. of Dry Blue made in solution with 150 gallons of water fill up tub, syphon off next morning, filter press and dry.

+++The No. 3 Plano Green should be "Monroe Green, instead of No. 3 Plano Green as it was put in the wrong envelope by mistake+++

*in 1000 in Envelope
from H. G. A. L. G.*