TECHNICAL ACTIVITIES

IN 1951

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1951, like 1950, was a banner production year. Buffalo factory volume remained at about the same level that it did in 1950; Port Erie factory volume increased about 6%. Our Buffalo factory apparently worked more efficiently in 1951 than it did in 1950, for it produced the same volume with 11% fewer batches. We also purchased fewer lots of raw material. Both factors eased the testing load on the laboratory. In 1950, laboratory control was barely able to keep pace with production; in 1951, the two activities intermeshed satisfactorily.

Fewer laboratory projects were undertaken and completed in 1951 than in 1950, as is indicated in the summary appended to this report. The greatest numerical decline in projects occurred in the industrial field. 31% fewer new industrial finishes were developed in 1951 than in 1950. However, it took just as much laboratory time to formulate the new 1951 products as it did to formulate the 1950 products. Most new industrial business is based upon supplying finishes that meet government specifications. The development of finishes to meet government specifications and the approval of these finishes by the appropriate agency is a long and costly process.

While raw materials were scarce in 1951, no wholesale raw material substitutions were necessary--as was the case during World War II. Restrictions on the use of cobalt made it necessary for us to reduce the amount of cobalt drier in certain key items. The laboratory work on this problem cost $1642. The shortage of naphthenate driers led us to spend $505 in investigating tallate driers. In neither case were we forced to make any observable change in the quality of our products as a result of these substitutions.

A considerable amount of laboratory time is being devoted to labeling nuisances. We are engaged in continuous correspondence with State of Virginia officials regarding the 1950 Virginia Paint Law. Thus far, all difficulties have been resolved to our satisfaction, but they have taken considerable time. We also engaged in lengthy correspondence with the Minnesota State Chemist regarding the Economic Poisons Act of that state. Again, we worked out of our difficulty, but time and effort were consumed in doing so.

Early in 1951, the laboratory supervised the microfilming of about 12,000 formulas and code sheets. These films have been distributed to afford maximum security of our records in the event of some major disaster. The job will have to be repeated in 1953, if we wish to keep the records reasonably up-to-date.

In 1951, our company received a certificate honoring us for forty years of continuous membership in A.S.T.M. Our company was one of

the first to recognize the need for reliable testing methods in the paint industry. While many paint organizations are now represented in A.S.T.M., only five other paint companies have been members for forty or more years.

In 1951, the laboratory developed and issued a paper-bound manual, "Standard Methods for Testing", for the guidance of technical employees at all of our plants. The standardization of testing methods minimizes intercompany technical problems and puts all testing on a businesslike basis.

One of the laboratory's duties is to supply our Advertising Department with appropriate color standards for use in the preparation of color cards. This work cost $945 in 1951.

Another laboratory duty which is developing into quite a chore is the inspection of subsidiary company formulas and liquid samples to determine whether or not they deserve a Pratt & Lambert label. During the year, $366 were expended on this activity.

RESEARCH

In April 1951, Dr. Henry Woodburn, head of the Chemistry Department of the University of Buffalo, was employed as a company consultant on an annual basis. His specialty is organic chemistry. He attends all meetings of our Research Committee and has worked on a number of outside projects for us. Dr. Woodburn's advice, experience, and suggestions have been helpful; it is expected that even greater benefits will result from this association as Dr. Woodburn becomes more familiar with our problems.

PAINT FENCE

For several decades, our company has leased a small plot of land near Swormville, New York, for conducting house paint exposure tests. The plot is ideally situated in the open country away from vandals and away from heavily traveled highways. When we first leased this land, the owner was a Pratt & Lambert employee. In recent years, the property has changed hands twice and this has made us aware of the insecurity of our arrangements. Our fences represent a big investment in technical hours (valued at $4000 per year for making experimental paints) and in fence construction (replacement value estimated at $5000). It would be impossible to move the fences without mutilating them from a technical standpoint. Our short term leases (3 year period) have placed us at the mercy of the property owner. Neither of the recent owners would agree to sell the land on which our fences stand as this would break up the continuity of the property for farm purposes.

After a year of negotiation, we finally obtained a 10-year lease on the property from the present owner. The annual rental remains unchanged. The investment we now have in this location seems temporarily secure.

TRADE SALES DEVELOPMENTS

An unusually large number of new trade sales products were developed during 1951. They included the following:

Cellu-Tone Satin - $713 were spent in developing Cellu-Tone Satin colors. The major problem--developing the white--was completed in 1950.

Solidex Colors - Formulation of the new colors was completed at a cost of $252.

Vapex Colors - $2768 has so far been expended in the development of latex paint. Formulas have been developed and turned over to our production department; some colors have already been shipped. No field reports have yet been received.

Redwood Stain - $286 were spent in the development of this item.

The New Vitralite Enamel Eggshell - $2401 were spent in laboratory work on The New Vitralite Enamel. Both the gloss and eggshell formulas were revised in 1951 at an estimated saving of $10,400 (based on volume produced from the time formula changes became effective until December 31, 1951).

The New Vitralite Enamel Gloss White was revised to contain zinc oxide in order to minimize after-yellowing. The New Vitralite Enamel Eggshell was revised in order to eliminate dehydrated castor oil, our use of which was exceeding our quota. The substitution of safflower oil for dehydrated castor oil was also helpful from a cost standpoint. We were able to reduce our costs without sacrificing quality.

Alkyd Flat Enamel - A promising alkyd flat enamel was developed at a cost of $1162 and is now undergoing field tests.

Lyt-all Spectrum Colors - Lyt-all Spectrum Green was definitely upgraded during the year by developing a more foolproof, streak resistant formula. Work on this improvement and other deep color work cost $640.

Lyt-all Double Duty Primer - Was changed back to an earlier formula with a cost saving of $4300 (based on volume produced from the time the formula was changed until December 31, 1951).

House Paint - Our tint base was revised to provide for better tint retention by substituting basic silicate white lead for the lead sulfate in the previous formula. It is estimated that this change saved our company $2300 during 1951. The exposure work on which the change was based was completed prior to 1951.

A group of so-called ranch house colors were developed and exposed in Florida with satisfactory results. However, the colors that were developed do not conform with the colors that we now wish to promote.

An experimental House Paint 300 Outside White with better gloss and leveling properties was developed at a cost of $411. This was field-tested but was not adopted because of inconsistent performance in these field tests.

A 100% white lead paint was also formulated when titanium dioxide was in short supply. A comparatively small quantity was actually produced.

A two-purpose (mildew resistant and tinting base) white was developed but not adopted because of its comparatively high cost.

Verdura Trim & Shutter Finishes - Were revised to permit use of purchased alkyds in place of our own alkyds, the production of which was hampered by phthalic anhydride shortages. We were able to save $900 in 1951 as a result of this formula change. Laboratory work cost $248.

Cement & Stucco Paint - Improved rubber base paints have been tested in Florida and have been tentatively adopted. These paints have better durability, better color permanency, and lower cost than our present oil-base Cement & Stucco Paint.

Lyt-all Mixing Liquid - A special varnish suitable for admixture with Lyt-all Spectrum Colors and Lyt-all Flowing Flat (to produce eggshell enamels) was developed but not adopted because of its conflict with basic sales policies.

"61" Floor Lacquer - Was developed at a cost of $116.

INDUSTRIAL SALES DEVELOPMENTS

Buffalo factory production of materials for industrial customers amounted to 920,163 gallons in 1951. This was 29% higher than it was in 1950. This increase seems remarkable in view of the shortage of metal and our comparatively small volume of military business.

Wrinkle finish production increased to 121,900 gallons and was 22% greater than it was in 1950. We are probably the third largest wrinkle finish producer in the United States. Pittsburgh Plate Glass Co. and Interchemical Corp. are believed to be larger producers.

A comparison between 1951 and 1950 wrinkle finish activities is shown below:

	1951	1950
Gallons produced for:		
Royal Typewriter Co.	51,000	34,500
International Business Machines	21,000	29,000
Others	49,900	36,150
Total	121,900	99,650
Cost of laboratory work:		
Royal Typewriter Co. projects	$ 309	$ 329
I.B.M. projects	403	317
Other work for specific accounts	2029	3014
Research	709	1763
Total	$3450	$5423

Research work on wrinkle finishes during the past year has centered on revising manufacturing methods to improve product uniformity. 60% of our wrinkle finish volume is now handled in 1000 gallon batches, which are turned out in only two to three days' time. The grinds are short and color and texture adjustments are quickly and efficiently manipulated.

In addition to wrinkle finishes, both Royal Typewriter and International Business Machines buy substantial quantities of primer. The former bought 19,000 gallons of primer in 1951 and this required laboratory work costing $1238. International Business Machines primer purchases amounted to 9100 gallons and represented $393 worth of laboratory work.

Production of hammered metal finishes in 1951 remained at the same level as it did in 1950--13,000 gallons. Interest in this novelty effect seems to be wearing off.

The following statistics pertain to the metal decorating field:

	1951	1950
Tonnage Decrease in U. S. Can Production (as compared with 1950)	6%*	
Gallons produced for:		
American Can (U. S. only)	53,800	
Brooklyn Metal Decorating Co.	28,900	
Hazel Atlas Glass Co.	10,000	
National Can Co.	3,400	
Total U. S. Production	96,100	81,600
Per cent Increase P&L U. S. Production	18%	
Total Canadian Production	32,400	38,900
Cost of laboratory work:		
American Can Co. projects	$ 628	$ 469
Brooklyn Metal Decorating Co. projects	675	1178
Other specific sales projects	1639	705
Research	168	148
Total	$3110	$2500

*Source - "Modern Packaging"

One item, Aluminum Mixing Varnish, accounted for 40% of our metal decorating finish business in 1951. 40,000 gallons were purchased by The American Can Co. to brighten up black plate cans so they would resemble tin cans.

The non-scorch varnish problem, which has been hanging fire for four years, has apparently been solved. Five drums were successfully used by Brooklyn Metal Decorating Co. Unfortunately, a raw material house, Schenectady Varnish Co., seems to be able to produce an equally good product at a far lower selling price. As a result, our hoped-for sales volume has not materialized.

Heretofore, we have sold either oleoresinous or alkyd sizes to the metal decorating trade. Both types have been satisfactory for some uses, but neither type consistently passed the pasteurizing and processing tests used to evaluate coated food packages and crowns. We have now developed a new vinyl-alkyd size that appears to meet every sizing need and which withstands pasteurization and processing. The new size has been given a successful preliminary test by American Can Co. of Canada and a barrel has been ordered for a full scale production run.

Our position in the collapsible tube field continued downward in 1951, as indicated on the following page.

	1951	1950
Decrease in U. S. Tube Production (in gross, as compared with 1950)*	7.7%	
Gallons Produced For:		
Wheeling Stamping Co.	6,580	7,000
Peerless Tube Co.	1,300	4,000
National Tube Co.	975	2,200
Standard Specialty & Tube Co.	900	1,000
Other U. S. Accounts	1,225	2,800
Total U. S. Production	10,980	17,000
Per cent Decrease P&L U. S. Production	41%	
Modern Containers, Ltd. (Sole Canadian account)	1,120	2,200
Cost of Laboratory Work:		
Wheeling Stamping Co. projects	$ 532	$ 442
Peerless Tube Co. projects	406	Not segregated
Other specific sales projects	562	1501
Research	None	4854
Total	$1500	$6355

*Source "Modern Packaging"

During the five years previous to 1951, we spent over $25,000 in development work on collapsible tube finishes, but our five year sales record was so disappointingly poor that we discontinued all research work in 1951.

In 1951, our production of collapsible tube finishes fell off far more than the industry's production of tubes. All metals used in the production of collapsible tubes, as well as tubes themselves, are on the government list of critical materials. Department of Commerce statistics indicate that tube production has fallen by about 30% since the post-Korean boom.

Our 1951 production of collapsible tube finishes was composed of the following product types:

Alkyds	70
Oleoresinous	22
Lacquer	6
Vinyl	2
	100%

After years of talk about vinyl tube coatings and thousands of dollars worth of research work, we sold only 300 gallons of vinyl

tube finishes in 1951. Tube manufacturers are still talking about vinyl coatings, but vinyl coatings are not yet replacing alkyd finishes. We have been told that Lever Bros. Co. has approved one of our vinyls for use on Pepsodent tubes. If vinyl coating is used in the future on these tubes and we obtain the business, it will supplant part of our alkyd business.

Fedders-Quigan purchased more than 60,000 gallons of our products in 1951. These included baking enamels, primers, and thinner. Probably the biggest single item was Condenser Coating Black, of which we produced 12,300 gallons in 1951. Laboratory work for the benefit of this account totaled $1310.

Heintz Mfg. Co. bought approximately 20,000 gallons of baking enamel and 6,000 gallons baking varnish during 1951 for use on metal television cabinets. Laboratory work cost $713.

Trico became a substantial customer again in 1951 and bought about 10,000 gallons of government specification finishes. Laboratory work cost $451.

Pratt-Whitney purchased about 13,000 gallons of black baking enamel, 3000 gallons of gray baking enamel, and a large volume of zinc chromate primer. Little laboratory work was required.

Zinc chromate primer proved to be its usual headache in 1951. We produced 28,000 gallons of primer meeting Specification MIL-P-6889A, Type I. This was almost five times our 1950 production of zinc chromate primer. However, we had numerous rejections on the grounds of drying, lacquer hold-out, and adhesion. These difficulties have now been overcome. Laboratory work on zinc chromate primer amounted to $4599 in 1951.

Another unusual specification primer promises to be a big volume item in 1952. It is termed "wash primer" and meets Specification MIL-P-15328. Wash primer is a polyvinyl butyral composition containing zinc chromate and phosphoric acid. It is really a metal pretreatment rather than a surface coating. Wash primer, so far, is being used solely in the aircraft field.

One item, Gunstock Coating Walnut, was developed for Springfield Armory. About 6250 gallons were sold in 1951.

Laboratory work on the development of industrial finishes to meet military specifications totaled more than $14,000 in 1951. This figure includes $1887 spent in preparing Navy inspection forms. In 1950, $903 was spent in the preparation of these inspection forms. This is one measure of the increase in our military activities in 1951.

Masell Manufacturing Co. bought 10,700 gallons of green and gray baking enamels for use on filing cabinets last year. $837 worth of laboratory work was done for the benefit of this account.

Our production of fabric coatings in 1951 slumped 43% below our 1950 production (11,700 gallons in 1951; 20,995 gallons in 1950). We spent $1383 on specific sales projects.

Carborundum Co. purchased 43,000 gallons of sandpaper adhesives in 1951 as compared with 65,000 gallons in 1950. $1092 was spent on laboratory work.

Carborundum "Fast Cut" and "Red-I-Cut" lines are still considered the outstanding waterproof papers in the industry. These are the papers that are made from Pratt & Lambert adhesives.

After two years of sales and technical effort, General Felt Products adopted Pratt & Lambert finishes as a second source of supply for making paper liner inserts (for jar and bottle tops). 1200 gallons of varnish were sold during the last half of 1951; a current order for 5000 gallons is being manufactured. Laboratory work performed for this account in 1951 amounted to $522.

Considerable technical effort was devoted to the following accounts, which have been, are, or promise to be large purchasers of industrial finishing materials:

Account	Value of Laboratory Work
Virginia Metal Products (steel partitions)	$923
Ingersoll Rand (heavy machinery)	895
R.C.A. - Victor	692
Bell Telephone and Western Electric Co.	594
Markel Electric (lighting fixtures)	536
Eastman Kodak	536
Eclipse Pioneer (machinery)	488
General Electric	465
Hard Mfg. Co. (beds)	442

COMPLAINTS

Complaint Record - Buffalo Factory

Year	Total Complaints Received	Per Cent Justified	Complaint Index*
1951	230	36	67
1950	266	38	77
1949	248	34	96
Avg. 1936-1940 incl.	268	27	154

*Number of complaints per million gallons of manufactured goods.

The number of complaints, the number of justified complaints, and the complaint index dropped in 1951.

Distribution of Complaints by Sales Offices

Originating Sales Div.	No. Complaints 1951	No. Complaints 1950	No. "Complaint Records" 1951	No. "Complaint Records" 1950
Central	85	100	68	64
Industrial	72	94	None	None
Western	69	72	56	47
Eastern	59	29	46	24
Canadian	17	18	None	None
	302*	313*	170	135

*These totals do not agree with totals in previous table as they include subsidiary and Fort Erie products as well as Buffalo-made products.

Causes of Complaint

	1951		1950	
	% of Total Complaints	% Justified This Group	% of Total Complaints	% Justified This Group
Color	16	39	14	32
Viscosity	11	53	14	52
Gelled, Lumpy	8	70	2	60
Drying	8	43	8	23
Gloss	6	26	12	53
All Other	51	18	50	12
	100%		100%	

As in previous years, color and viscosity complaints were most numerous. There was a marked decrease in gloss complaints. There was also a marked decrease in complaints due to mislabeling. In 1950, there were nine such complaints; in 1951, there were only three. In both years, only Buffalo factory products were involved in mislabeling complaints.

Certain divisions seem to specialize in the nature of their complaints. The Chicago office, for example, registers 40% of all the color complaints reported to the laboratory. The Industrial Sales Division registers 37% of all the viscosity complaints reported to the laboratory. Half of all streaking complaints originate in the Central Sales Division.

LABORATORY EXPENSE

The total cost of operating our Buffalo laboratory during 1951 was $252,908, or 7.7% more than in 1950. 6% represented wage and salary increases; 1.7% represented the increase in general expenses. The money was spent as follows:

Activity	1951	1950	1949
Research	$ 61,900	$ 65,600	$ 67,700
Special Sales Problems	70,000	58,200	63,600
Manufacturing Services	121,000	111,100	96,800
Total	$252,900	$234,900	$228,100

These figures, representing dollar expenditures, reveal that we are doing less and less research, but the extent to which this activity has been curbed is best illustrated by time card studies (which are not influenced by the inflationary effect of wage increases). In 1951, we spent only 81% as much time on research as we did in 1950 and only 76% as much time as we did in 1949. 3% more hours were spent on special sales problems in 1951 than in 1950. Total hours spent on all research and development activities in 1951 was 96% of what it was in 1950.

	Cost of Research and Development*		Cost of Manufacturing Services	
	1951	1950	1951	1950
Per Gallon Buffalo Factory Production			3.5¢	3.2¢
Per Batch Made at Buffalo			$6.95	$5.75
Per Gallon Combined Buffalo and Fort Erie Production	3.8¢	2.9¢		
As Per Cent of Dollar Value of Sales of all Products Made at Buffalo and Fort Erie	1.3¢	1.1¢		

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*Excludes that portion of paint work that benefits our subsidiary companies, but includes paint work for benefit of Fort Erie factory.

PERSONNEL

	1951	1950	1949	1941
Resigned	7	16	7	11
Transferred to other divisions	-	-	-	3
Discharged	1	1	-	3
Enlisted or drafted	5	3	-	5
Total Separations	13	20	7	22
Average number employees	60	61	61	57
Separation Rate	20%	33%	11%	40%

Labor problems were fortunately few in number in 1951. While we now have nine former laboratory employees in military service, most of these men were comparatively inexperienced. We were able to replace them with young women. So far, we have had no difficulty in attracting young women of high calibre, but this labor source can dry up, if Buffalo area manufacturers obtain large military contracts. We cannot compete with defense contractors on a wage basis.

Only two of the 1951 resignations resulted from the appeal of more attractive jobs; nearly half of 1950 resignations resulted from this reason. The chief cause of 1951 resignations was pregnancy.

NEW EQUIPMENT

The following new equipment was installed in 1951:

Gardner Washability Machine	$ 200
Salt Fog Corrosion Test Equipment	1879
A.S.T.M. Distillation Unit	200
Torsion Balance	80
	$2359

Probably the most expensive piece of equipment ever acquired for laboratory use was ordered in 1951 for delivery some time this year. It is a Blaw-Knox Experimental Resin Plant that is a small scale replica of our factory alkyd and oil kettles. The laboratory equipment is jacketed and is designed for use with Dowtherm. The kettle is fitted with a reflux condensor, a vacuum pump, an agitator, and gauges and controls. The entire unit will cost $10,400 and installation is estimated to cost another $2000.

Ever since the first Blaw-Knox alkyd kettle was installed in the factory, there has been no way to duplicate this operation on a small scale. Consequently, experimentation had to be conducted in the kettle itself at high cost and with an interruption in

production. The laboratory has never been able to do oil processing work on a small scale. The new experimental Blaw-Knox unit should put us in a position to duplicate all existing factory resin and oil operations. In addition, it is hoped that we can prove the advantages of the solvent reflux method for making alkyds. We are presently using the fusion process for making alkyds. In the solvent reflux method, a small amount of solvent in the batch is continuously refluxed. It is claimed that the solvent reflux method offers these advantages:

(1) Aids water removal (water being a by-product of the chemical reaction that produces alkyds) and, therefore, shortens processing time.

(2) Self-cleaning. The accumulation of "burned on" resin at the top of our kettle creates a difficult and costly cleaning problem. The solvent in the reflux method washes down over the upper part of the kettle keeping it clean.

(3) Reduces losses (claims of 1-2% savings are made).

(4) Improves color and uniformity (by eliminating the possibility for charred material to drop back into the kettle).

Solvent refluxing cannot be performed satisfactorily in existing laboratory and factory equipment. The operation is too hazardous for present laboratory equipment. Present factory equipment is not fitted with a reflux condensor, but it is estimated that such a condensor could be attached for about $3000, should this step be desirable.

The new experimental equipment will also enable us to study vacuum methods, which are necessary for production of certain newer types of alkyds, such as the styrenated alkyds.

SUMMARY OF 1951 LABORATORY WORK

	1951	1950
New Products Developed	1,096	1,514
Sales Problems Submitted to Laboratory	1,435	1,688
Sales Problems Reported	1,382	1,693
New Research Problems Assigned	54	81
Research Problems Completed	52	71
New Raw Materials Investigated	342	309
Raw Material Shipments Tested	2,857	3,024
Batches Tested - Buffalo Control Labs.	17,346	19,224
Batches Tested - Port Erie Control Lab.	2,589	2,557
Service Calls by Technical Personnel	131	133
Technical Department Bulletins Issued	20	33
Paint Manufacturing Bulletins Issued	54	71
Formula Analysis Bulletins Issued	35	255

March 10, 1952