THE MILL

BRADLEY CONTAINER CO

1953-1967

On October 18th 1953 the Bradley Container Company signed a ten year lease for 65,000 square feet covering two floors at the #5 mill on Thompson Street with Maynard Industries.

Bradley Container had obtained exclusive patent rights for the United States and Canada to make plastic tubes and bottles by a newly developed European process.

The first container was produced in early 1954.

In January of 1956 Bradley expanded by two more floors for a new total of 205,000 feet at 5 Thompson Street. Total employees increased from 28 to 500 in two years.

By yearend the employment figure increased to850. A two metal end plastic can was added to the product line.

On June 28th 1956 Bradley became a division of Olin Mathieson Chemical Co

In September 1956 American Can Co. purchased Bradley Container Co. and the Sun Tube Co. of Washington New Jersey from the Bristol Myers Co. and merged the two into a subsidiary.

In 1965 the first assembled sample Glaminate tube was produced at this location. The tube was the forerunner of the current toothpaste and other tube products.Multiple plants are producing both types of tubes nationally and internationally.

On February 15th 1967 the plant closed after removing all production equipment to the Washington NJ plant.+

BRADLEY CONTAINER COMPANY
1953-1967
THE INTRODUCTION OF THE PLASTIC TUBE TO NORTH AMERICA

On October 18th 1953, the Bradley Container Company signed a ten year lease for 150,000 square feet covering two floors at the # 5 mill on Thompson Street in Maynard Mass. with Maynard Industries.

The president of the new company was Bradley Dewey,former president and founder of The Dewey Almy Chemical Corporation. A graduate of Harvard and MIT, he served as head of the Gas Defense Division in World War I, and in World War II served as Rubber Director and as such was responsible for the construction of this country's synthetic rubber plants. He also served as Chairman of the Joint Chief of Staff Guided Missile Commission in 1945-1946. He was awarded the Distinguished Service Medal for his service in WW I and the Medal for Merit in WW II.

Mr. Dewey, along with some local investors and the Olin Matiheson Chemical Corporation were joint owners.

EXCLUSIVE PATENT

Bradley Container had obtained exclusive patent rights for the United States and Canada to make plastic tubes and bottles by a newly developed European process.

The key piece of machinery was an injection molding machine that applied a threaded head to a extruded cylindrical tube with a specific wall thickness cut to length.

Eight injection machines along with a single headed machine for experimental and tube samples were delivered from Europe.

The other pieces of machinery to fill out a full line was an extruder to extrude the body of the tube and cut to length, a printer and external coater and finally a capping machine.

Also, off line was an internal coater which was used to line the inside of the tube for barrier purposes, cutting down permiated product through the tube wall. The tube was a fully headed tube minus the cap to allow the coating material to drain through the orifice which was filled from the bottom. They later were capped. This proved to be too costly both in a high number of rejects and wasted material plus a slow production process. This was later replaced by another method.

Since the machinery and tooling were produced in European nomenclature the engineering prints used the metric system.

Originally, there were seven diameters and three wall sizes for the tube body, and four neck sizes M3, M4, M5, M8, and each neck having three orifice sizes. The M standing for metric measurements.

The original tooling was based on constant outside diameter. That is as the wall size of the tube changed. The matrice (cavity) inner diameter was constant. The manchon (mandrel) to allow for the difference in the thickness of the wall. Therefore, with the increase in the thickness of the wall the inner diameter of the tube was reduced. This this necessitated three sets of mandrels on the printer, outside coater, and capper

The sequence of the production line was extruder, injection molder, printer, external coater, and capper. When each segment was produced they were bagged and brought from one machine to the other. Early on the finished product was dumped on a table and were capped by hand and put in shipping containers.

Because this was the first plastic tube product, sample tubes had to be made for

marketing purposes. This required short run production which also required many line tool changes. A product filling machine was needed to fill the produced tubes as the filled tube had to be heat treated and clamped to seal the bottom. At this point in time there was no heat sealing equipment for the tubes on the market except for this machine. Each customer delivered their formulated products for filling.

A laboratory was necessary to do shelf life test as well verify the quality of the incoming resins and coatings.

POLYETHLENE

Polyethylene became available in 1942. Dupont made polyethylene that fit in perfectly for the plastic tube. It was easy to form and easy to print and coat. The process and the material met at the right time. Initially, only clear and white resin was used. The white being mixed at Dupont in 50 pound bags.

As can be seen, it took a lot of effort to market and generate sales to support the introduction of the plastic tube to North America.

PERSONNEL

Some of the early personnel: Henry Griffith VP sales, Fred Prahl VP research and Development, Alex Makowski, chief engineer, Bruno Hoffman, engineering and the toolroom, Bill Stanley production manager, Mr. Van Loon quality control manager Harold Whitestone personnel manager, Lena Plummer purchasing, Dick Flint laboratory, Dan Barilone plant engineer, Sylvia Newis executive secretary, Elaenor Navadonsky plant nurse.

Other engineering personnel: Charles Badavas, Jack Wathen, Joe Fitzpatrick, Dave Gaudet,Gene Doucette, Ray Wario, and Bob Kingsbury.

Joe Trocki production scheduler, Bill Gates shipping, Dave Hartzell personnel,

Production supervisors: Pat Moscorello and Paul Macomber.

Leadmen: Art Newis toolroom, Al Nyman printer coaters, Pete Belida eatruders, Al Kajima injection molders, and Roger Marchand machine shop

Machinist: Dan Grieve, Al Siniki, Stan Pleskowicz.

Printer ink technician Bob Kurgan. Walter Lankewitz material control machine shop and toolroom.

Plant maintenance : Ray Dumas millwright, Leroy Hamilton millwright, and Bill White electrician.

Production personnel: Paul Thorpe printers, Ken Pierce and Jim Faria injection molders, Bernie Doyle extruders, Jim Walsh and Charlie Richards toolroom, Al Lalli, Bill Wekoja, and Ed Fultz production floor personnel.

Office personnel: Natalie Crowley, Ellen Barnes, Mary Kane, Margaret Plecewicz and Kathy Trocki.

In two years time personnel had increased from the original 28 people to 500.

Originally, three consultants came over from Europe to help in the startup. They were still on board in 1956.

A NEW DIRECTION

A new injection molding machine had been designed by engineering, increasing the output of each machine and adding larger sizes to the product mix going from the original seven sizes to eleven.. The number of stations on the new machine were increased to four five and seven. The design was based on a constant inside diameter of the body of the tube. This differed from the original design of tooling for the injection molder. The importance of the change was that when the wall of the tube changed ,now the mandrels on the printer and coaters need not change and the matrices were changed in the dies for the wall changed.

New thread sizes were added due to the larger diameter tubes. They were buttress bottle threads. standard to the bottle industry. A so called one shot series was developed by Bradley Container. These are single service tubes, usable once. There were seven sizes. Johnson and Johnson tubes used the S-16 series which is a standard for metal tube,. and allowed them to cross over to either plastic or metal.

So called squeeze to use bottles were made by using the regular tube and adding a rigid pre-formed bottom which was heat sealed to the base of the tube after it was filled

2 ME CONTAINER

Another promising package that was developed was a squeeze to use container that was called 2ME.

2ME'S were composed of a cut length of polyethylene tubing with mechanically seamed

metal ends. The sizes were based on metal can standards.They were made in a separate area of the plant. The cut to length tube was seamed on the bottom and then printed and then returned to be seamed on the other end.

They were marketed very successfully as containers for pesticides and detergents. The market potential was 200,000,000 units.

EXPANSION

In January of 1956, 63,000 square feet utilizing the third floor in building # 5 was added. Because of the success of the plastic tube and the increase in demand for them and plus the demand for the new 2 ME product and more tube lines being added more space was needed.

Bradley, had commissioned the Atkins and Merrill Inc. of Sudbury, Mass. to make a plant floor layout to improve the flow of the production process. Their proposal was to move the extruders to the third floor, the injection molding machines to the second floor and leave the printer, coating and capping machines in place on the first floor. The idea was to go from a horizontal line to a vertical line moving through cutouts in the floors. Newly developed automatic feeders were to replace the two people who were manually feeding the extruded tubes to be headed. The intent was that one of persons would now feed the extruded tubes through tubing between the third floor and to the feed stations on the injection machines located on the second floor. The tubes were mechanically forced over the manchon ready for heading. The next group of tubes were held up by a stop until the injection machine table indexed and the automatic feed was to repeat the sequence of again.

Once the product was finished it was packaged and sent to the shipping area.

Current employment was now approximately 300 in production, 60 in maintenance and machine shop, 30 in the filling department , and 110 in administration, research and development and laboratory.

The employment figure projected for the end of the 1956 was to stabilize at 850.

Also in the floor plan the original engineering room and tool room were relocated to other floors from their first floor locations.

PROBLEM

The new feeders for the injection molders did not do the job that they were designed for. After being on the production line for a for a few months to iron out the problem the project was abandoned at that point. All the incoming units that came form the vendors were scrapped.

The reason that the design did not work was that there was too much variation in the inner diameter of the extruded tube which could not be maintained consistently. When the inner diameter of the tube became smaller than the poincon it could not go down fully to the shoulder of the poincon and would create a jam and a disfigured assembly. This created a situation where the output for the machine was reduced drastically.

The marketing for the squeeze to use tube had been so successful that in the short period of two years fifteen hundred combinations of products and sizes were being produced. Add to this the demand created by the introduction of the 2ME container, that any interruption of overall production could be not be tolerated. Thus the decision was made hold up on the floor layout.

CHANGE

In June of 1956 Bradley Dewey , the founder, resigned and became a consultant to Olin Mathieson Chemical Corp. for the squeeze to use tube and research projects..

With this change Bradley Container became a subsidiary of Olin Mathieson.

Originally, Olin was the majority holder and provided the capital to sustain the growth of the company. More capital was needed for future growth.

Apparently the introduction of the 2ME container caught the eye of the American Can Company whose headquarters was located in Greenwich CT.

In September of 1956 they purchased Bradley Container for $7,000,000. and Bradley became a subsidiary of the American Can Company.

William C Stolk, the president of American Can became the interim chief executive officer until Leonard A Britzke was named president in March of 1957. Mister Britzke a 22 year veteran of ACC has served as vice president and general manager since the purchase of Bradley in September of 1956.

J B Davenport, a 19 year veteran of ACC was appointed assistant general manager and responsible for the overall operations of the plant.

I. A. M. UNION

Bradley Container and the International Association of Machinist had signed a labor agreement for one year providing wage increases and other benefits. It was made effective March 1 1957 and made retroactive to January 1 1957. All production workers received a ten cent per hour increase and the trades people, machinist, electricians,

millwrights, and plumbers received a fifty cent per hour increase.

AQUISISTION

A few months later, American Can purchased the Sun Tube Corporation, a unit of the Bristol Myers Corporation in New Jersey. Sun was the oldest manufacturer of collapsible metal tubes in the United States. Ironically, American Can was the oldest maker of metal containers. Even though Bradley was just over three years old they were the oldest plastic tube maker.

Later, Bradley Container and Sun Tube merged to become Bradley-Sun, division of American Can.

CAPACITY

With more space on the first floor allocated to the production of the 2ME Container, output increased considerably for both the pesticide and detergent products. Additional warehouse space was needed to store the detergent cans. All the leading detergent makers wanted these new cans. With limited capacity, those containers that were produced had to be warehoused and accumulated with enough product to fill the production runs at their fillers.

PROBLEM

The early marketing and distribution of the liquid detergent was on the east coast and was successful. However, as the distribution areas were increasing nationally the filled liquid detergent containers were to be marketed to the west coast.

Shipments were made by trains. In going over the mountains, and because of the height

of the mountain, there was a differential in pressure in relation to the level the containers were filled thereby creating leaking products. A major problem that could not be resolved.

Eventually, the production of the liquid container was discontinued, but the pesticide containers were just as popular as ever and were retained.

CHANGE

In July of 1958 Kenneth G Michel was named vice president and general manager of Bradley-Sun Maynard. He succeeded J B Davenport

A graduate of Newark College of Engineering he joined Sun Tube and performed in various positions rising to the position of vice president of manufacturing.

AUTOMATION

With a continuation of increasing demand and the addition of more machinery and production personnel, the engineering department had been developing ways to tie each machine into a automated line.

To improve the feeding, and increase the output of the of the printer, a large rotating dial that would accept the extruded tubes, and by centrifugal force , would stack up on the inner wall behind a gate and escapement feed. The tubes were first fed by hand with bagged tubes, until a blower system was added at the end of the extruder to carry the tubes up a chute, across the room at ceiling height, and dropped into a canvas pouch which had an opening in its bottom. The tubes were backlogged in the pouch which had a paddle on its side. As the tubes were feeding the printer, and the stack was reduce, an electric eye would now activate the pouch paddle which would drop enough tubes

to restack the feed . If the printer had to shut down, an electric eye at the fill level of the pouch would signal the extruder stop feeding the chute and sidetrack to a plastic bag. The filled bags were saved until the printer went down and were fed to the pouch by hand.The people hand feeding the printer were eliminated.

The new layout of the line now had the printed tube go to the injection molder to put the threaded head on the tube. These were delivered to the capper.

INSIDE COATING MACHINE

Another change in production machinery was the internal coater. As was stated earlier, to line the inside of the tube and form a barrier to prevent loss of product through the wall of the tube. Previously, the inside of the tube was filled with liquid coating, and drained through the tube orifice. A bare section at the end of the tube was left for sealing after the product was filled.

The new process utilized spray nozzles, which spray coated the inside of the tube wall pumping the liquid coating from barrels through hosing to the spray nozzles.

Again, this was done off line. The result was improved production numbers and a

A lowering of rejected products.

EARLY CUSTOMER BASE

The first tubes produced were for liquid saccharine.

Among the large customer base there were major companies like Johnson and Johnson first aid cream tubes, utilizing four sizes, Procter and Gamble with their Prell shampoo tubes also using four sizes, Cake Mate tubes for decorating bakery products with icing ,

four sizes, D A P caulking tubes, plus Schering Corp. nasal aspirated tube. The Sea and Ski Company, Coppertone and other suntan lotion companies. Also, the BINNEY and Smith Company finger paints .And Ban roll on tubes and other deodorant companies.

Many other companies that started early on a small time basis, and found success with the new package, also added to increased demand.

The major companies formed a good nucleus as far as scheduling purposes by ordering their requirements on a steady basis.

In the beginning, the Prell shampoo tubes were filled at Maynard until they could aquire their own fillers with the ability to heat seal the bottom of the tubes.

The Prell account was so important, and made a major contribution to the marketing of the plastic tube. Another new kid on the block had been television, and through this medium their advertisements featured a tube of Prell shampoo falling onto the floor from a shower, and with the notation that they were unbreakable versus the glass bottles that were in use at that time. A huge positive.

THE COMING OF AGE

The company now was starting to enjoy the early fruits of adding the newly designed injection molders, and additional production lines. The engineering changes from the constant outside diameter tooling to constant inside diameter saved a lot of tooling changes on line , and the beginning of the upgrade to the automated line.Ah yes growing pains.

PERSONELL CHANGES

First, there was the resignation Bradley Dewey and other personnel that came on board to help in the startup phase. The three consultants returned to Europe. American Can Company brought in their own administration. After approximately two years Ken

Michel from the Sun Tube was brought on board as the new general manager.
About half of the original people in engineering had moved on to greener pastures. Frank Dobson, also transferred in from Sun Tube and co managed the engineering with Charles Badavas. Newer people were Lee Dowd from American Can,Mexico, Richard Venuti and John Piltzeker, two local residents. There was little turnover with the production supervision.

COORDINATED EFFORT

Since the beginning in 1953, the engineering department had begun to redesign and upgrade the machinery to better coordinate the production floor.
A multitude of problems had to be resolved. Simultaniously, there were short run sample orders which put pressure on the scheduling process. New production personell to train. Increasing to three shifts. Bringing in the added lines and setting them up. Adapting to thin wall extrusion which in itself was new. Plus, adapting to the new injection molders. Going to the vertical line which did not occur. The failure of automatic loaders for the molders and closing down the production of the 2MEe lines.
Also adding pressure over the first few years was the fact that the demand volume was

increasing rapidly. Whew. Time to cut to the chaff.

Frank Dobson and Charlie Badavas along with rest of the engineering staff had a real challenge to keep moving forward in coordinating the production floor. Little by little the major problems were being resolved and light could be seen at the end of the tunnel.

SCHEDULE CHANGES

With the demand coming in for new product lines a new policy was instituted whereby new sample orders were increased from 10,000 minimum to 50,000 minimum tubes. This policy helped ease the turnover of line tooling changes. Also, the earlier major corporations, such as Johnson and Johnson and Procter and Gamble and others now had bigger distribution demands as they filled their pipeline with their products nationally. Minimum of orders were to be 300,000 tubes. This made it easier to reduce the many changes on the lines as well as improve the quality of the products.

COLORFUL ADDDITION

It came out of the blue, in1957 a small cosmetic company from California by the name of Max Factor ran a test market of a blue pastel 7/8" diameter tube filled with pancake makeup. Max Factor was a leading makeup artist in the movie industry. His company did makeup work on most of the major stars of the period.

The test market was so successful that the company returned immediately with large production orders.

When you get an innovative product that is highly successful there is a race to capture the full market before your competitors follow suit. It is a three prong strategy. First, a test market, followed by filling up the distribution channels, and again as the initial distribution is bought up following the same success as the test run another production run must fill this void until the demand is met.

At this point whatever tooling that was in house was utilized to meet this strong demand.

DOMINO EFFECT

The major cosmetic companies were really trying to jump on the bandwagon. One, the Revlon company made an offer to contract for a full production line dedicated to their product but were rebuffed because all of the 7/8"tooling was allocated to Max Factor and J& J first aid cream product, as well as the other early companies that had committed their products. There was a pastel pink that was also used.

Revlon was very aggressive in trying to persuade Bradley to give them production time and in effect block out further inroads by other companies. These are not unusual tactics in an very competitive industry. There were some ill feelings, and words of retribution which never came about, as Bradley held its ground and left its production lines open on a competitive basis. Long term this served Bradley well with its other customers. After all Bradley was a small company with capacity at full bore.

Because of the introduction of this successful product. other companies took notice . Primarily Avon Products, test marketed a hand cream which also did very well and immediately came in with orders for thirteen new products with various sizes. Now

Bradley had a another new high volume industry to contend with. The stakes for a high quality tube were very high as can be imagined.. The irony of the Avon orders was all of their tubes were the standard white. So the pastel tubes drew in more business from other companies. Many of the Avon tubes were 1 3/16" and the tooling was already in house and did not interfere with the booked out 7/8" tooling.

PROMOTION

Bill Stanley the production manager was promoted to plant manager.

NEW PLANT

In September of 1962 a new production plant was opened in Shelbyville Tennessee. Procter and Gamble with headquarters in Cinncinatti Ohio had grave concerns about the Maynard plant being the only location producing tubes. Their concern was, what if a catastrophe such as a fire in the old mill building occurred?. There was no backup plant to keep their products in the pipeline. Also, there were no competitors to fill a void in the production of tubes. Loss of revenue, and disruption of distribution of their products certainly was a legitimate concern. Other major industries such as soft drink and breweries as well as other major distributors always had such contingency plans.

Jack Wathen , from Maynard engineering, was appointed the new plant manager and Dave Gaudet also from the engineering department was the assistant plant manager and John Piltzeker from engineering was to help out in coordinating the startup.

While the plant was being erected both Jack and Dave were trained in production procedures on the floor at Maynard actually running production to get a feel of the

Production methods and problems they may encounter at the new plant.

The Maynard engineering department in conjuction with Shelbyville management co-ordinated efforts to procure the machinery and tooling for production.

As the new plant was ready for operation the machinery was moved in.

An overall requisition for tooling was made with a local machine shop that made the tooling for Maynard. Based on the requirements of the production schedules the tooling was ordered. However, as the schedules were changed, the tooling that was required to meet those changes had be prioritized. It was a tightrope walk, until over the course of the months with all machines on board the scheduling needs and the tooling orders finally meshed.The overall cost of the tooling inventory was $350,000.

Shelbyville was now on a learning curve which of course was much easier than the startup in Maynard.

NEW TUBE DESIGNS

Over the course of years there were request by customers to redesign by intergrating current tubes like the DAP tube which originally used a standard tube with a nozzle and cone cap. The nozzle was separate and came with the cone attached. By making tooling replicating the cone angle of the nozzle that was on the screw type unit and injecting the nozzle to an extruded body we now had a fully intergrated tube minus the same cone cap which was put on later at the capper. The cost of this method over the old reduced the overall cost of the package to the customer. To this day it is on the market.

Another product, a customer, the SEA & SKI COMPANY that made suntan cream which

also had a separate unit composed of a cap with a plug insert. This cap unit was also used on a blown bottle. The customer wanted to use this same cap minus the plug but using the bottle thread and plug design intergrated on a 1 3/16th extrude tube. At first the idea was rejected because there was no precedent of making this tube in its complexity. The plug was an insert having a centerpost attached to a crosspiece having four openings with the crosspiece being attached to the inner diameter of the insert. The original plug insert was made on a standard injection molding machine which had no problem making the four openings and post of the insert.

This was new territory as the injection molding machines in the Bradley process were totaly different animals. They were designed to form an opening (orifice) formed by pins on a soupape forming a carrotte which was later snipped off revealing the orifice.

To gain the same design opening as the plug insert a principle called a kissfit which was nothing more than an interference fit of the flat top surface and the bottom of the insert that formed the design of the crosspiece and post. The total stackup tolerance of the tooling had to be precise to make the kissfit. This varied with the Bradley process in that the stackup tolerance.was much wider. Instead of interchangeable tooling parts which to make other tubes this set of tooling had to be a dedicated set for this item only taking out a number of tools out of inventory.

Another problem was the crosssectional section of the bottle thread was thicker than The crossectional area of the center post and web. There was no guarantee of a good seal with the top angle of the post and the orifice in the cap. Also, there was no cooling in the insert in the die to help cool down the thickness of the threaded section thus

slowing down the overall cycle time which made this design economicaly unsound. However, the sunscreen company insisted on keeping the latter design. Later the thickness of the threaded area was reduced but this was not enough to make it economicaly feasable.

A few months prior to the initial launch of a manned spacecraft we received a request to make a tube using the head of the tube to simmulate a rocket. The tube was a one shot twistoff type flat nose cone design. The commemorative tube was filled with liquid candy.A limited production run was made. There was not a repeat order.

Another twistoff type tube was used by the Pillsbury Company to introduce a product using rice oil to be inserted in the package with the flour mix. The product was test marketed in Canada. However the project was eventually cancelled because the rice turned rancid.

Also, a inner lined plastic tube with a plastic applicator cap was made for a Texas company to hold a food product –mustard-. A limited production run was made and there was no repeat order.

Another novelty was the addition of the English Leather barrel cap to a tube to compliment the blown bottle version using the same barrel cap.

AUTHOR

The majority of this endeavor has been as best, a recollection from my memories. I have tried to include as many as the personnel as I could recollect . My position in the company as Tool and Product Designer allowed me to observe and participate in the growth of the company.

As has been noted with a tremendous effort by dedicated personnel, a new product was introduced using new and upgraded machinery, new resins, introduction of this product to the country. There were many trials and tribulations however from my point of view it was well worth it.

Today, there are more manufacturing plants in the United States, Mexico, and Canada. I am proud to have been able to be a part of this new industry and watch it grow and contribute to the economy and added employment for many people.

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