TIME LINE HISTORY
OF
THE MONARCH MACHINE TOOL COMPANY©

BY

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INTRODUCTION

"A tool is but the extension of a man's hand
And a machine is but a complex tool.
And he that invents a machine augments
The power of man and the well being of mankind."
Henry Ward Beecher

Inscription found in the main lobby of The Monarch Machine Tool Company's Sidney Ohio office and factory.

This history of The Monarch Machine Tool Company was researched from company records, company publications, and an unpublished history of the Company. It is meant to give a brief overview of how the company grew through the years and its contribution to the state of the art of turning machines (lathe) design. What it fails to give is a feel for, and history of, the people that made all the achievements possible. It is the people that distinguish one company from another. Technology is free to everyone. Inventions are there for anyone to invent them. At any period in time, every company has the same tools at their disposal. It is then up to the employees of the company to have the intuition to grasp and used these tools, to create new manufacturing techniques, new process, new inventions and features to improve the design of their product. It is then up to the management of a company to foster an atmosphere of inventiveness, pushing for better, more efficient ways of doing things, and providing the resources to accomplishing the goals set forth. Thus, it is this chain of people that weave the history of a company. It is this same group of individuals that sets one company apart from another.

Monarch evolved from making low-end lathes, to being considered the première lathe builder in the world, and to its decline in the 1980's and 1990's. This history is given in a time line form to note major events in Monarch's history. Special attention was given

to introduction of new machines, features, inventions, and other innovations. In addition, plant expansions, employment figures and other information is given to convey how the company grew and declined. Leadership throughout the majority of Monarch has remained stable, with most managers being internally trained, including most of Monarch's presidents.

The early broachers list the lathes by swings over the bed. It was extremely hard to relate this swing to actual model name. When other documentation was found to cross-reference swing and model name, this is given in the text. Basic descriptions of the machines are also given where possible.

The following abbreviations and symbols are used throughout the time line:

"*" = Major development in design or manufacture of turning machines
SN = Serial Number
AT = Air Tracer
HT = Hydraulic Tracer
CD = Center distance

PRELUDE:

1888: The 1888 *Railroad, Telegraph and Steamship Builders' Directory* lists Sebastian, May & Co., 177 W. 2d St., Cincinnati, O, as a maker of band saws, circular saws, steam scroll saws, engine lathes, machine tools, drill presses, lathes, metal turning lathes,

1890 The June 18, 1890 issue of *Electrical Engineer* carried the following note:

THE SEBASTIAN-MAY CO.
The works of this company in Cincinnati are not only of interest on account of their completeness and facility of turning out machinery, lathes, etc., promptly but also because here we find one of the largest, if not the largest, electric motors in Cincinnati. Mr. Sebastian recently told one of the staff of THE ELECTRICAL ENGINEER, who had the pleasure of visiting his works, that herewith power furnished through shafting from an adjacent building—a power which was not only inadequate but unreliable. The different electrical people, he said, finally convinced him that a motor was what he wanted and now a twenty horse Queen City electric motor (440 volts) is running the entire factory noiselessly, easily and satisfactorily.

The December 3, 1890 issue of *Electrical Engineer* carried the following note:

THE SEBASTIAN-MAY CO.
On or after Dec. 1, the well-known Sebastian May Co. of Cincinnati, O., will be installed comfortably at Sidney, O. They have issued the following notice: "It

gives us pleasure to state that owning to the rapid and continued growth of our business, we have been compelled to obtain larger manufacturing facilities (the third time within a period of seven years), and have decided upon Sidney, O., on the lines of the Dayton and Michigan and the Cleveland, Cincinnati, Chicago and St. Louis Railroads, where we have secured a large tract of land, upon which has just been completed the erection of commodious brick and stone structures, especially adapted for our business, and which we have supplied with the best and most modern machines, tools and appliances obtainable, for the rapid and economical production of our specialty lathes. This, together with the excellent shipping facilities at our command, will enable us to promptly supply any demands made upon us for our tools.

"Thanking our many customers for past favors, and trusting for a continuance of the same, we extend a cordial invitation to all to visit our new works or write us when in need of lathes or other tools."

The December 1890 *Mechanics* has an ad for "Improved screw cutting foot and power lathes, drill presses, chucks, drill dogs, and machinists and amateurs' outfits. Lathes on trial. Catalogue mailed on application. The Sebastian-May Co., 175 Highland Ave., Sidney, O."

1894 The July 1894 issue of *Engineering* magazine lists the following catalog: "The Sebastian-May Company, Sidney, Ohio.—Foot Lathes and Engine Lathes. Emery Grinders, Planers, Shapers, Chucks, etc. 16p."

1909: The Monarch Machine Company first open for business on October 4, 1909, in a newly constructed 9,960 sq ft shop located on Oak St. in Sidney Ohio, with 20 employees. The first lathe was shipped the later part of the month. Only 14" and 16" swing lathes were offered.

Company officers were, **I. H. Thedieck**, President, **W. H. Wagner**, Vice President and **A. C. Getz** as secretary and acting plant manager. **D. M. Paddock** was first shop superintendent.

Monarch traces its roots to the Sebastian-May Company, a Cincinnati, Ohio manufacturer and dealer in tool and power lathes, drill presses, machinist and amateurs' supplies. Benjamin Sebastian, Jr., founded it with Jacob May in the 1882. They moved to Sidney, Ohio in July 1890, with help from Sidney's commercial club, which help them to secure land and build a new factory. In 1892, Benjamin Sebastian sold his share in the company to Sidney native, Allen P. Wagner, and returned to Cincinnati to start the Sebastian Lathe Company. In May of 1893, A. P. Wagner bought out Jacob May's shares, where in May

returned to Cincinnati to joined his former partner. Wagner would keep the Sebastian-May Co name for many years.

Due to poor economic conditions and legal problems in 1898, Wagner moved his business to Detroit, Michigan, with a loan secured from I. H. Thedieck (his cousin's husband). He also changed the name of the company to the A. P. Wagner Co. In 1908, Thedieck foreclosed on Wagner, thus providing the machinery and engineering drawings to start The Monarch Machine Company. The designs of the lathes secured trace back to the designs made by Benjamin Sebastian with little changes.

The Sebastian Lathe Company would go on to produce many models of lathes. One of the most popular would be the Sebastian Gold Seal lathe. Sebastian headed the company until his retirement in 1917. Cincinnati Metalcrafts, Inc. would own the Sebastian Lathe Company for many of years before selling them to the Sheldon Machine Company, of Chicago in 1953. Sheldon would continue the Sebastian name by using the Sebastian gear head lathes to bid on government contracts. In the mid 50's, Sheldon would design 13" and 15" gear head lathes that would be the last lathes to carry the Sebastian name.

In 1905, A. C. Getz found the Sidney Machine Works in the former Sebastian-May factory. This company produced wood working equipment under the *Famous* brand and under the Sidney name. They started building metal cutting lathes shortly there after, changing the name of the company to Sidney Machine Tool. By the start of the Second World War, they were only making metal cutting lathes. Sidney was famous for their herringbone gear headstock.

Sidney Machine Tool Company was bought by Buhr Machine Tool Company of Ann Arbor, Michigan in 1961 and renamed it Buhr Sidney. In 1963, Summerfeld Machine Company purchased Buhr Sidney to form Summerfeld-Sidney. Summerfed-Sidney ceased building lathes early in 1964 as they consolidated operations to their main facility in Pennsylvania. They then sold the former Sidney Machine Tool Company's factory to the Stolle Company. In 1967 McFadden Machine Company purchased the liquidated assets of Sommerfeld-Sidney. John Sherbondy purchased the repair part rights for the lathes produced by the Sidney Machine Tool Company, in April of 1974. He formed Sidney Machine Company for the sole purpose of supplying replacement parts. Stolle used the former Sidney Machine Tool plant for a variety of functions last being a warehouse until it was badly damaged by fire in December 2004.

From the original Sebastian-May Company sprung directly two companies, and one indirectly lathe builders of note, which The Monarch Machine Tool Company is the focus of this history.

1911: First foreign sales.

Total shipments 156 lathes.

October, I. M. Foster becomes superintendent. He was a Cincinnati trained machine builder.

1912*: A quick change gear box was designed, but infringed on a patent own by Flanther Lathe Co., of Naushua, N.H. Monarchs received a license from Flanther to build this gearbox, which Flanther considered a better design than their own. Lathes after this incident carried the Flanther patent number 810,634.

Introduced 18" swing lathe. This gave Monarch a line of lathes of 14", 16" and 18" swing and of 6 foot beds or longer (by 2 foot increments).

In spring of 1912, Wendell E. Whipp joined Monarch, coming from the National Cash Register (NCR) Company. He took over as plant manager and sales. He was married to Thedieck's daughter Inez, who died of pneumonia shortly after they were married. Whipp would never remarry, but would become a featured character in the prosperity of Monarch.

1913: 20" swing lathe introduced

Lion head logo adopted

February 1913, Model A (14") lathe designation adopted for the 14" lathe. This designation was discontinued June 1930.

Redesigned the quick-change gearbox. Old style gearboxes had the change lever low on the left hand side and angled upward to the right. The new designed gearbox was high on the left hand and angled downward to the right.

Made first United States government shipment. The U.S. government would be one of Monarch's largest customers.

1914: In January Monarch announces their first electric motor driven lathes. The motor was geared to the spindle through cloth gearing, and had a 3 to 1 variable speed. Some of the first of these lathes went on board U.S. battleships.

A spur-geared headstock is offered as an option to the cone drive (belt drive) headstock. This headstock had 8 speeds from 25 to 375 rpm with a 300-rpm input. This headstock can be powered from over head shafting or from fixed speed or variable speed DC electric motor of 1.5 or 2 hp.

Gus Granlund, from Massachusetts, became shop superintendent.

12,000 sq ft was added to the plant. This addition featured Fenestra solid steel frame windows.

1915: 6,968 sq ft addition was added.

1916: Two new additions were built of 1,418 sq ft and 10,000 sq ft.

Model B (18") designation was adopted April 1916, and was discontinued November 1934.

1917: Introduction of 24" and 30" swing lathes to the product line.

Sales topped 1 million dollars for the first time with 2350 lathes being shipped, of which 1700 were 14" swing x 6-foot model. The majority of Monarch's production went to France and England as part of the war effort.

1,158 sq ft addition was built.

Monarch offered the first group life insurance in Ohio and the 27th company in the U.S. to do so. Monarch had 221 employees at this time.

1918: 22" and 26" swing lathes were added to the product line. This gave Monarch a complete offering from 14" to 30".

An April 1918 ad in *Iron Age*, states lathe available in 10-12-14-1618-20-24-26-28-30 inch swing.

Production for the year would be over 3,000 lathes. This would be the highest level until World War Two.

13,202 sq ft was added to the plant.

1919: Monarch was a major builder of lathes for the war effort, selling many machines to Britain, and France. The exact numbers of machines built from the founding are unknown because machines of this period were made in lots, but it is estimated that 11,700 lathes were shipped by 1919. A December ad boosts "…*more Monarch lathes are built and sold than any other high grade lathe*."

Model D started February 1919, and discontinued January 1934.

Model E started August 1919, and discontinued in November 1932.

Model H started June 1919, and discontinued in February 1929.

Product offering range 12, 14, 16, 17, 18, 20, 24, 26, 28, 30 inch swings.

Total floor space 55,000 sq ft.

1920-1922: Sever machine tool recession. Monarch nearly goes out of business. Employment reduced to only 3 office workers, and the remaining shop employees put on short rotating workweeks.

1920: In September, introduced "gap" bed lathe for greater swing without raising the head and tail in the sand. These lathes were offered in the following swings (over ways – over gap) 14-23, 16-25, 16-27, 18-28, and 20-30.

8,105 sq ft was added to the plant.

1921: Summer – first completely new lathe introduce. This was the Monarch junior, which sold for $225. Over 900 of these 9.5" swing lathes were sold. It had a swing of 9.5" over the bed, 7.75" over the carriage. It had a quick-change gearbox, and was offered in bed lengths of 2.5 feet to 5 feet. The Monarch Major was the big brother to the junior with an 11" swing.

As the Junior was reaching its end of the production life, the Sheldon Machine Tool Company either bought the rights to manufacture or out right copied it. Either way, this allowed Sheldon entry into lathe manufacturing with their version of the Junior called the Metalworker in the late 1920's.

Model FA (16-25 gap bed) introduced April 1921, and discontinued in October 1930.

1922: Model FB (18-28 gap bed) introduced April 1922, and discontinued in September 1930.

1923*: Monarch developed the first helical geared lathe headstock in the U.S.A. This was an 8-speed headstock designed **Fred Dickas** and **Pete Bickel**.

1924*: Patent 159700, clutch-Actuating Device for Lathes was filed 6/21/1924 by **Wendell Whipp**. This was the friction clutch apron for controlling feeds of the carriage and cross slide. This was Monarch's first patent, which was invented by **"Bam" Albers** and **Wendell Whipp**, and was award on 8/17/1926.

Patent 1642863, Headstock for Lathes, was filed 10/27/1924 by **Wendell Whipp**, and was award on 9/220/1927. This patent covered the 8-speed helical headstock.

First helical geared headstock lathes were offered for sale. Over 1,000 sold by 1926, and 90% of all lathes were equipped with this head by 1928. These headstocks had the following threaded spindles:

Models A – B (14" 20"): 3.5-4 USS RH threads #5MT
Models L, D, N (20" – 30"): 5.25-4 USS RH threads #6MT

1925*: February 1925 Model L (20" 24") started, and was discontinued in February 1935.

1926*: Adopted the use of auto lacquer for the finish of lathes. This reflected the philosophy of having lathes looking as good as they performed.

Patent number 1,636,028, Lathe, was filed on 1/21/1926 by **Wendell Whipp**, and was award on 7/19/1927. This patent had to do with rear tool rests on the carriage.

January, **I. H. Thedieck**, Monarch's founder and president died. In February, the board elected his son **Frank P. Thedieck** as president. **W. H. Wagner** was elected vice president and **Wendell Whipp** as secretary, treasure and general manager. Whipp, though, continued to be the man that ran the company. Frank P. Thedieck had been associated with Monarch from its beginnings and sat on its board since 1918.

1927*: Monarch started to assign individual serial numbers to each lathe. The first serial number issued was SN-1000. Before this time all machines were built in lots of 4 to 20 machines and assigned lot numbers. The company also reorganized its shop floor. From 1920 to 1927, Monarch shipped 3,518 lathes. This gives an estimated total pre-serial number of 15,218 lathes since 1909.

Introduced Timken tapered roller bearings supported spindle lathe at the Cleveland machine tool show, in October. These spindles bearings were made standard in 1928 for all Monarch lathes. Monarch was the first to do so in the industry.

Monarch files patent 1,686,743, Carriage Stop Mechanism for Lathe, on 6-22-1927. This patent was invented by Fred Dull and was approved on 10/9/1928.

3,846 sq ft was added to the plant.

Model T and TT started June 1927 and discontinued May 1930.

1928*: Monarch files patent 1,750,555 on 5/21/1928 by **Wendell Whipp** for a Geared Headstock for lathes. This patent was approved on 3/11/1930, and covers the improved helical geared 8 and 16-speed headstock.

Monarch files patent 2,027,568, Lathe, invented by **Wendell Whipp** and **Clifford Bickel**, on 10/11/1928. This patent covers the Hydraulic Automatic Lathes, and was award 1/14/1936.

Monarch adopted anti-friction bearings on all revolving shafts. First, lathe builder to do so.

Adopted high strength semi-steel nickel chromium iron for the beds. This replaced steel beds.

Model N adopted in February 1928, and production runs till the late 1950's, with the introduction of the Series 80. The model N had a standard swing of 25" and could be raised in the sand to a max. Swing of 36.5".

3,361 sq ft added to the plant.

1929*: Adopted flange type spindle nose. This would be known as the 1930 flanged spindle nose and was offered as follows:

12" swing – 6.25 dia. nose
14", 16", and 18" swings – 8.25 dia. nose
20" thru 36" inclusive swings – 11" nose.

Adopted Timken tapered bearings in apron.

Introduced 1,200 rpm headstock at N.Y. machine tool show. This was the fastest headstock at the time. Later that year, introduced geared headstocks with speed of 1,500 to 2,000 rpms.

Monarch has shipped an estimated 23,380 lathes by this date.

Model AA (14") started in June 1929 and was discontinued in November 1936.

Model CAA (14" toolroom) started in July 1929 and was discontinued in November 1940.

Model CB (18" toolroom) started in September 1929 and was discontinued in June 1930.

Model LL (20" & 24") is started in December 1929 and was discontinued in March 1937.

Model CY (toolroom) was started in June 1929, and when it was discontinued is unknown.

Monarch introduces the No-3 hydraulic Automatic Lathe. This is a 20" swing 11" swing over the cross slide and nominal 15" center distance, and having a max. Spindle speed of 550 RPM.

Total floor space 70,000 sq ft.

1930*: February, Introduced 16" swing lathe with 4,400-rpm spindle.

Introduced the Monarch-Keller form turning machine. This machine was developed with the Keller Control Co. of N.Y. in 1929. Monarch had exclusive rights to the Keller control for as long as Keller held the patent. This control was one of the first tracer controls for turning parts from a master template.

Model CBB (18 & 20" toolroom) started March 1933.

Model CU (toolroom) was started in October 1930. The date of discontinuation for both the Model CBB and Model CU is unknown.

Model K (12"?) and KK (14") started November 1930. These lathes stayed in production until the Kompact series were introduced in the late 50's.

Model NN started January 1930. This was the largest swing of Monarchs engine lathes, with a standard swing of 32", and raises of up to 48". This model stayed in production until the introduction of the Series 90. This lathe was fitted with a 16-speed helical gear headstock. This headstock is standard on model N, and all toolroom model C lathes, and can be fitted to any other lathe as an option.

Monarch offered lathes with the following swings: 14" & 16" AA; 16" C; 18" & 20" B; 18" & 20" BB; 20" L; 24" LL; 24" & 26" D; 27" & 30" N; 30" & 36" NN, along with special manufacturing lathes.

1931: **Wendell Whip** is named Monarch's third president after **Frank P. Thedieck** becomes Chairman of the board. **Fred Dull** became vice president and secretary.

Monarch files patent 1,929,269, Apparatus for Automatic Form Turning Lathes, invented by **Clifford A Bickel** and **Philber Abe**, and awarded on 3/10/1933. This patent covered the Keller Control form turning lathe.

1932*: May – first to develop forced lubrication to carriage, apron and compound.

Monarch files patent 1,935,400, Machine Tool, invented by **Clifford Bickel**, on 2/3/1932. This patent covered Keller control forming lathe and was awarded 11/28/1933.

Monarch files patent 2,086,153, Apparatus for Control of Machine, invented by **Clifford Bickel** on 2/3/1932. The patent covers the tracer control for form turning, and was award 7/6/1937.

Monarch files patent 2,050,746, Machine Tool, invented by **Clifford Bickel**, on 2/5/1932. This patent covers an early version of the Magna-matic, and was award on 8/11/1936.

Monarch files patents 1,929,270; 1,931,157; 1,937,400, Machine Tool, invented by **Clifford Bickel**, on 3/18/1932. Patent 1,929,270 cover improved Keller Form Turning Lathe, and was awarded on 10/3/1933. Patent 1,931,157 covered mechanical forming slide and control and was awarded 10/3/1933. Patent 1,935,007 was also for a mechanical forming slide and control and was awarded on 10/17/1933.

1933*: Magna-matic production lathe introduced (Model Z), in September. This was the first dedicated Keller controlled high production lathe model offer by Monarch.

Monarch files patent 2,039,876, Automatic Lathe, invented by **Clifford Bickel** on 2/10/1933. This patent is for the Magna-matic mentioned above, and was awarded on 5/5/1936.

Monarch files patent 2,051,127, Universal Lathe, invented by **Clifford Bickel** and Stanley Brandenburg on 4/3/1933. This patent covered universal (able to do chucking work or between center work) Magna-matic, and was awarded by 8/18/1936.

Monarch files patent 2,052,441, Apparatus for Controlling Operation of Tool, invented by **Clifford Bickel**, on 10/20/1933. This patent yet another version of the Magn-matic, and was awarded 8/25/1936.

Hand feed precision surface grinder (#2 grinder) introduced in October. First one (SN3961) was sold to W. Fries Tool and Machine in Ft Wayne, IN.

Monarch built 6 special Q buffing lathes (SN3918 to SN3932).

Monarch complete line consisted of: 12" C, 13"C, 14"C, 14"KK, 16"C, 14"AA, 16'AA, 18"W Special, 18"BB, 20"BB, 20"C, 22"BBB, 20" L, 24"L, 24"LL, 24"N, 27"N, 30"N, 36"N, 30"NN, 33"NN, 36"NN, Magna-Matic, Precision toolroom grinder, Monarch Hydraulic Automatic, High speed lathe, Monarch Keller controlled form turn lathes, Centrode Device-Oval Chuck, Cam Milling Attachment.

1934*: Model W (16" & 18") was started in July 1934. It is not know when this model was discontinued.

Monarch filed patent 2,055,227, Motor Automatic Lathe, invented by **Clifford Bickel**, on 1/8/1934. This patent covered another aspect of the Keller controlled form turning lathe, and was approved on 9/22/1936.

Model M was started in October 1934. This model had a standard swing of 20" and could be raised in the sand to a max. Swing of 30.5". This model stayed in

production until the introduction of the series 62 and 80 in the mid to late 1950's.

1935: * Monarch files patent 2,105,962, Diameter Gauging Apparatus, invented by **Clifford Bickel**, and was award on 1-18-1938.

Monarch also filed patent 2,143,355, Lathe, invented by **Philber Abe**. This patent covered the 5T-manufacturing lathe, and was awarded on 1/10/1939.

Monarch Shapemaster introduced in the later part of the 30's. This was a lathe equipped with Keller controls and Alvy Kelly forming attachment. It was heavily used to make round molds as found in the bottle industries. Patent 2,105,962 pertained to part of this lathe ability to turn non-round forms. The Shapemaster revolutionized the bottle mold industries by freeing it to economically produce irregular shape molds.

Added Camlock to flanged spindle. These spindle noses were offered as follows:

12" through 18" swings inclusive – D-1 6" nose
20" through 36" swings inclusive – D-1 8" nose

Developed patented anti-friction taper attachment, and first offered for sale in 1936.

September 4, 1935, Monarch went public.

1,040 sq ft added.

Monarch offered the following lathes: 12"KK & CKK; 14"AA & CAA; 16"W & CW; 18"BB & CBB; 20"M; 22"M; 24" N; 27" N; 30"NN; 36"NN; Keller Automatic Form Turning & Boring equipped lathe; Centrode and Oval chuck; 14" Magna-Matic; 12" Type 5T Semi-Automatic Double Carriage Manufacturing Lathe; and 18" BB high speed 20 hp (2000 rpm) shaft turning lathe.

1936*: Surface grinder discontinued in June, after 85 being built. The last being sold (SN4775) went to George M Bernstien & Co of Chicago, IL.

The Monarch 5T production lathe introduced in April.

Monarch files patent 2,176,700, Telescopic Taper Attachment invented by **Clifford A. Bickel**, on 5-5-1936, and this patent was approved on 10-17-1939.

Monarch filed patent number 2,138,811, Surface Hardening Lathe Bed, invented by **Philber A. Abe**, on 7-29-1936, and was approved on 12-6-1938.

Monarch files patent 2,208,319, Apparatus for Lathe, invented by **Clifford A. Bickel** and **Kurt H. Wills**, on 8-26-1936, and this patent was approved on 7-16-1940.

Monarch files patent 2,143,258, Cam Making Machine, invented by **Clifford A. Bickel**, on 9/30/1936, and this patent was approved on 1/10/1939.

Monarch files patent 2,140,949, Apparatus for Turning Complex Work piece, invented by **Clifford A. Bickel**, on 10-22-1936, and this patent was approved on 12-20-1938.

Monarch Hydraulic Multi-Speed Toolroom Lathe: offered in swings of 12", 14" 16" and 18". Variable speed hydraulic unit in cabinet leg drive by a 5, 10, 15 or 20 hp electric motor is coupled to the spindle through V-belts.

Constant surface cutting speed 18"BB (22.5" swing) lathe having variable speed hydraulic drive for facing of large parts.

1,430 sq ft added.

1937*: Flame harden and ground beds developed and patented. This would be a trademark feature of Monarch lathes for many years.

Monarch files patent 2,184,377, Apparatus for Taper Forming Machine, invented by **Clifford A. Bickel**, on 7-26-1937, and this patent was approved on 12-26-1939.

Monarch files patent 2,184,684, Form Producing Machine, invented by **Clifford A. Bickel**, on 8-18-1937, and this patent was approved on 12-26-1939.

Monarch has patents 2,154,947 and 2,157,948, Hardening of Metal surfaces, assigned to it. These where invented by Herbert Beeny and Authur Lloyd and file on 6-17-1937, and awarded 4/18/1939 and 5/9/1939 respectively. Both men lived in Coventry, England.

18,125 sq ft of floor space is added.

1938: June, engineering work started on the Model EE lathe. This is to be a 10" tool room lathe with a hydraulic controlled variable speed headstock. Monarch worked with Western Electric Co. of Chicago to develop this lathe. Western wrote the initial specifications for this tool room lathe. Monarch invested nearly $100,000 in the development of the EE.

5,101 sq ft of floor space is added.

1939*: Monarch EE (double E) precision toolmaker lathe introduced. First machine built is SN-EE6156 on 12-21-38. The EE is still in production with well over 15,000 being built, making it the best selling Monarch ever. The EE was covered by patent 2,381,422, Sensitive Precision Lathe, invented by Clifford A. Bickel, and filed on 10/31/1939. This patent was awarded 8/7/1945.

September 1939, the Model WAA was started.

June 24, new office dedicated which marked the completion of 35,018 sq ft building project. This brought the total floor space to 133,897 sq ft, and the claim of the largest dedicated lathe factory in the United States. It is interesting to note that the brick for the new office came from **I. H. Thedieck's** department store which burned early in the year.

From December 1938 through December 1939 Monarch sold over 1,000 lathes of all types. A large portion of these sells was due to the start of the world war in Europe. This gave the company a strong backlog of machines going into 1940, and completing Monarch's recovery from the Great Depression.

1940-1945: War years, no new machines were allowed to be developed during this time, also only standard model could be produced. Production was limited to, Model EE, 12" and 16" Model C (CK and CW), 18" Model BB, 20" and 22" Model M, 25" Model N, and 32" Model NN.

Total lathe production for period was 19,345 machines. From 1943 thru 1945, Monarch produced non-lathe parts to fill some thirty different contracts. The two largest contracts were for parts for 40mm Bofors anti-aircraft guns and for 2,2328 Rotol power take-off units for British Lancaster bombers. Several orders also were for the Manhattan Project for which Monarch made special lathes and parts.

1940: Total production was 2,491 lathes. Employment reached 1,000 people in December.

Monarch files patent 2,259,472, 2,309,298 and 2,311,203, Taper Attachment Construction, invented by **Clifford Bickel**, on 6/10/1940, and this patent was approved on 10/20/1942, 1/26/1943 and 8/3/1943. Patent covers the Electro/mechanical control of an automatic cycle lathe. Both men worked in Monarch's Dayton, Ohio engineering office.

Monarch files patent 2,351,649, Method and Apparatus for Controlling the Operation of Lathes, invented by **George Wintermute and David Bench**, on 8/12/1940, and this patent was approved on 6/20/1944.

Monarch files patent 2,325,733, Rapid Traverse Mechanism for Lathes, invented by **Clifford Bickel**, on 6/16/1940, and this patent was approved on 2/16/1943. This patent mainly discusses the rapid traverse mechanism and apron controls that would later be found on the Series 61.

Monarch files patent 2,309,299, Method and Apparatus for Correcting the Lead Error of Screw Threads, invented by **Clifford Bickel**, on 11/18/1940, and this patent was approved on 1-26-1943. This is the first patent for Monarch's lead screw variator.

Monarch files patent 11/27/1940, Lathe, invented by **Clifford Bickel**, on 11/27/1940, and this patent was approved on 4/24/1945. This patent covers what would become the Series 60 and Series 61 lathes, main part of the patent discusses advance fully enclosed gear box that would find it way onto the Model EE.

20,000 sq ft of floor space is added.

1941: Total lathe production was 3,277. Employment in December was 1,490 people.

A 26,880 sq ft expansion was completed in April bring total floor space up to 196,000 sq ft.

Over 3,000 flame harden lathe beds have been produced.

Monarch offered the following lathes: 10" EE; 12", 14" 16", 18", 20" model C toolroom lathes; 12" model KK; 14" model AA; 16" model W; 18" model BB; 20" model M; 22" model M; 24" model N; 27" model N; 30" model NN; 36" model NN; Model 5-T manufacturing lathe; Monarch Automatic Sizing controls; Magna-Matic; Monarch-Keller Controlled lathes; Monarch-Kelley Shaping controlled lathes (Shape-Master); and 12"x30 variable speed lathe.

Monarch received its first award for outstanding production Efficiency or E-award making Monarch the first in Ohio to receive the award and only the 28th in the nation to be receiving this reward.

Monarch files patent 2,378,892, Surface Hardening Metal Area of Limited Size, invented by **Philber Abe, Herbert Brown and Melvin Crosby**, on 2/5/1941, and this patent was approved on 6/26/1945. This patent covered an improved method of hardening bed Vees and other angled surfaces.

Monarch files patent 2,389,757 and 2,512,008, Apparatus for Operating Lathes invented by **Clifford Bickel**, on 3/21/1941, and this patent was approved on 11/27/1945 and 6/20/1950. The first patent was split from application 471,818 filed 10-31-1939 and covers the round dial gearbox found on the early version of the Model EE. The second patent covers an electro-mechanical method of

achieving constant surface speed while facing a part, or other change in part diameter.

Monarch files patent 2,378,001, Flame Hardening Torch, invented by **Folsom E. Drummond**, on 3/28/1941, and this patent was approved on 6/12/1945.

1942: Total lathe production was 8,116. This was the largest single year production in Monarch's history.

December total work force was 2,700 employees.

1943: Total production was 2,157 lathes. Special purpose machine were allowed to be produced by midyear.

Monarch supplemented its employee insurance with health, accident, hospitalation and surgical benefits for the employee and their dependents.

Monarch files patent 2,377,305, Gear Change Mechanism for Lathe, invented by **Clifford Bickel**, on 1-9-1943, and this patent was approved on 6/6/1945. This patent covers a form of hydraulic gear shifting that would be found in the Dyni-Shift headstocks of the Series 62, 80/81 and 90/91.

1944: Total lathe production was 2,090. Hourly workers voted to unionize.

Monarch offered the following lathes: 10"EE; 12", 14", 16", 18", & 20" model C; 12" KK; 14"AA; 16"W; 18" BB; 20" M; 22" M; 24" N; 27" N; 30" NN; and 36" NN; Automatic Sizing lathes for 14"-36" lathes; Monarch-Keller Form Turning for 14"-36" lathes.

Monarch files patent 2,441,915, Grooving Machine, invented by **Philber Abe,** on 4/3/1944, and this patent was approved on 5/18/1948. This patent covered a special "pencil" mill use for milling oil grooves in way surfaces.

1945: Total lathe production was 1,214.

Employment averaged 1,200 for the year.

Monarch receives its 6th and final E-award.

Monarch files patent 2,495,312, Power Unit for Machine Tool, invented by **Clifford Bickel, Stanley Brandenburg, Theodore Foster**, on 1/5/1945, and this patent was approved on 1/24/1950. This patent covers the basic concept for a module-cutting unit, which was used on the Uni-matic.

Monarch files patent 2,450,788, Lathe Attachment, invented by **Theodore Foster**, on 3/10/1945, and this patent was approved on 7/5/1949.

Monarch files patent 2,585,215, Power Unit, invented by **Clifford Bickel, Standley Brandenburg and Theodore Foster**, on 3/24/1945, and this patent was approved on 2/12/1952, and cover the Uni-matic module.

1946*: Jan. 26, Uni-matic introduced

Speed-matic introduced

Air-tracer patent secured from Bailey Meter Co. This is patent 2,259,472 Duplicator for Machine Tools and invented by Clearance Johnson for the Bailey Meter Company. Monarch would continue to acquire rights to Bailey's patents through the 1950's.

Monarch files patent 2,561,724, Apparatus for Operating a Lathe, invented by **Clifford Bickel**, on 3/11/1946, and this patent was approved on 7/24/1951.

1947: Mona-matic (SN-30506 - 13"x 30 CD) introduced at the National Machine Tool Show in Chicago. First Mona-matic sold was SN-30657, a 13 x 42 CD sold to Remington Arms Co., recorded on Sept. 8, 1947. By July 1952, 387 Mona-matics had been sold. Production of the Mona-matic continued into the early 1980's with over 1,000 machines shipped.

September saw the introduction of the Series 60. This was the first post war engine lathe to be introduced. It was offer in swings from 16 to 20". This machine was a replacement of the Model C. The Series 60 would be joined by the Series 61. The first Series 60 was SN-30510 (11-11-47) and SN-30930 (10-15-47).

Roll Turn version of the Model NN was developed, and was called Model NNN. This was a special NN with Keller controls and the ability to turn hard material.

Jerome Raterman succeeded **Wendell Whipp** as president, with Whipp becoming chairman of the board of directors, with the death of **Frank P. Thedieck**. Raterman joined Monarch in June 1916 as a lathe serviceman, and work a variety of assignments gaining experience for the next 20 years until he was name to the board of directors, in 1937, and name VP in 1940.

1948: Introduced "European Model" lathes. These Models were two discontinued models still had a market in Europe.

Monarch built the research and Development building in the southwest corner of the plant's lot. This was a separate building housing its own prototype

machine shop and engineering department. The exact date of this construction is not known, but was referred to in the late 40's. Monarch was one of the few machine builders that maintained at separate R & D division, which it operated into the early 1990's.

Monarch files patent 2,540,573, Power Actuated Gear Shift, invented by **Raymond Evans and Claude Greene**, on 2/27/1948, and this patent was approved on 2/6/1951

1949: Merchantability Test Lathe introduced

The Series 70 or Model EE-1000, a 13" variable speed lathe was first built sometime in the early post war period. Number of this lathe that was built is unknown.

The 32" Model 150, a variant of the Series NN was first built sometime in the early post war period. It had a hydraulic shifted headstock and a variable speed 50 hp motor drive. Number of this lathe that was built is unknown.
Total floor space 212,127 sq ft.

1950: Development if a new large heavy-duty lathe was started August 2, 1950, and was given SN-NN33243. This development would result in the Series 90 lathe, which was completed in May 13, 1953. Eventual the Series 90 would replace the Model NN lathes.

Monarch received the Certificate of Management Excellence Award from the American Institute of Management.

1951: Right angle lathe, or T-lathe was introduced. This lathe was offered as the Model F, and Model O. 1,000 plus T-lathes are built by 1957.

41,536 sq ft of floor space added to the north end of plant, and 30,000 sq ft of existing plant was modernized.

Monarch received the Certificate of Management Excellence Award from the American Institute of Management.

(Give note about size of engineering department, engineering development lab, and Dayton engineering department. Estimated engineering personal between 100 and 150.)

1952: Sales for the year total 37,000,000. This large increase in sales and request from the U.S. government to increase production, Monarch commenced an extensive moderation program that started in 1950 and was expanded upon and concluded in 1952. 54,540 sq ft of floor space added to the south, and 44,540 sq ft of existing plant was modernized. The modernization in 1951-52 involved

building a new shell over seven structures, which were then torn down. This allowed critical defense production (namely T-lathes) to continue while allowing a modern facility to be constructed. When this modernization was finished the factory floor space totaled 308,000 square feet under roof.

Length of main aisle way runs through the entire plant a distance of 930 feet (310 yards). The machine shop uses over 350 machines with 77 new units installed during this moderation. 81 were newly installed of 125 cranes. All lighting was mercury arc fluorescent, which provided uniformly high-level illumination over the entire plant. Two new "water wash type spray paint booths were installed with one being feed by a conveyor and the other by overhead crane. A shot blast chamber was installed. New down draft exhaust was installed for grinding and snagging castings.

A new 720 car employee parking lot was constructed on the west side of the plant, across from the B&O rail line, with a foot bridge over the railroad tracks to the plant. Three new washrooms were added with 660 lockers.

Since the start of the Korean War, Monarch employment went from 700 to 2000 of which 55 employees had 25 or more years with the company. Over 8,000 people attended the year company picnic.

Total production from Monarch's founding was in excess of 45,000 lathes; with over 25,000 featuring flame harden bed ways. Over 1,200 of these lathes were equipped with Keller controls.

With this expansion, Monarch claimed the title as largest exclusive lathe manufacturer in the nation.

As of July, 387 Mona-Matics had been shipped.

1954: Series 90 introduced to public, November 9, 1954.
First Series 62 (SN-39256) was sold

1955*: First Series 80 (SN-40774-AT) was sold on March 3, 1955. The Series 80 replaced the Model M and N lathes. Approx. 300 Series 80/81 were built.

The Series 62, 80 and 90 were shown at that years NMBTA show. These machines all had automatic hydraulic shifting headstocks. The operated set two dials on the headstock to the desired surface speed, and the headstock automatically shifted to the closest gear to give that speed. All heads had 36 speeds. Up to 4 different speeds could be pre-selected, and automatically shifted at the apron.

First hybrid tracer NC lathe demonstrated at the NMBTA show. This was a modified Model 1000EE.

Monarch files patent 2,929274 invented by Charles Goss, on 10-14-1955, and this patent was approved on 3-22-1960.

1956*: Monarch filed patent number 2,898,891, Hydraulic Flow Control, invented by Nagle Gusching and Richard Flanigan on 2-13-1956, which was approved on 8-11-1959.

Monarch files patent 3,024,610, Electrical Control System, invented by **Wayn Ulman**, on 4-26-1956, and this patent was approved on 3-13-1962.

Offices are remodeled, and the penthouse is added. The penthouse had its won kitchen and dinning area to entertain special guests in a formal yet relaxed atmosphere.

1957: **Wendell Whipp** dies in boating accident at Monarch's Rod and Gun club.

Monarch files patent 2,951,342, Electro-Hydraulic Servo System, invented by **David Lundeen**, **Wayn Ulman**, **Nagel Gusching**, **Richard Flanigan**, on 11-14-1957, and this patent was approved on 9-6-1960.

Monarch files patent 3,017,863 invented by **Wayn Ulman** and **Nagel Gusching**, on 2-15-1957, and this patent was approved on 1-23-1962.

1958: Rotroary profiles tracer lathe introduced. The first of these lathes was SN-43323-RP (11-21-58) and the last was SN-51688. 45 of this type was built 7 of which were 5 spindle machines.

Air tracer pak introduced

Missile Master Lathe introduced later part of year. This lathe was made to turn large diameter for missiles and was offered in two models, the Model 6550 and Model 8567. Each model had center distance from 48" to 300" by increments of 48" and its main spindle drive was 25 hp. It has an air tracer and constanent surface speed as standard features.

Series 180 Ultra-Precision (PHH) contouring lathe was introduced. The first of these machines was sold on 7-25-57, Series 180 Model 1511. The Series 180 was the most precise lathe in the world at the time. It was mainly used in nuclear research labs. Approximately 20 of these lathes were built.

Monarch files patent 3,053,583, Tool, invented by Albert Albrecht, on 5-15-1958, and this patent was approved on 6-29-1962. This patent pertained to a more ridge method of clamping a cutting insert into a lathe tool holder.

1959: The Series 612 was introduced as a low cost sister to the Series 62. These two machines shared 80% commonality where the main difference was in the headstock. The Series 612 had a manually shifted 36-speed headstock. The Series 612 replaced the Series 60/61. About 1,115 Series 612 were built.

Total floor space was 324,769 sq ft.

A Monarch turning machine brochure claimed over 4000 tracer equipped lathes have been shipped since 1929, and of these over 1500 were the original Monarch-Keller contour turning control.

1960: The Series 610 was introduced. This series was the same as the Series 612, but of lighter construction (i.e. narrower bed), and thus lower in price.

Monarch files patent 3,103,827, Air Bearing, invented by **Richard Shaw**, on 5-10-1960, and this patent was approved on 9-11-1962. The patent pertained to an air bearing to aid in the positioning of the tailstock on a lathe.

1961: The first Model 25NC was introduced. The first Model 25NC sold was SN-44711 on April 25, 1963. 70 of this type were shipped.

Series 91 was introduced as a replacement of the Series 90. Series 91's were nearly the same as the Series 90, but with improvements in the hydraulics and controls. There were about 110 Series 90/91 built.

Monarch obtained patent number 2,972,868, Machine Tool Slide Control invented by Bernard Sassen of Torrington, Conn. This patent related to tracer controls.

Jerome Raterman retires as president and CEO, **Kermit Kuck** name as president and CEO. Kuck joined Monarch in 1935 after graduating from Ohio State University with a degree in Mechanical Engineering. In 1938, he joined Monarch's sales staff in New York, heading that office during WWII. In 1943, he was named as Chief engineer and VP of engineering in 1948, and Executive VP in 1959.

1962: Development of the EC lathe start in November with SN-46477EC. The last EC (SN-51302) was sold November 19, 1975 with around 106 machines being shipped.

1963: First Model 20NC was sold. This was SN-45339 being sold on June 28, 1963. 16 machines were shipped with the last being SN-48975 being sold on December 23, 1968.

Monarch purchased the Edlund Machinery Company in Cortland, NY, on September 1. This would become Monarch Cortland Division building vertical machining centers. Edlund original product line was single and multiple spindle drilling machines.

1964: First Model 32NC (SN-46418) was sold on 6-28-64. 62 machines of this type having been built, the last SN-52311 being shipped on 6-22-79.

First Model 40NC (SN-46423) was sold on 12-14-64. Over 20 of these machines have been built.

1965: Series 30 Model EC first introduced at the NMBTA show (SN-47515 and 47802 12-8-65). The last Series 30 was shipped on 9-30-87 (G-53766) with over 116 of these lathes having been built.

First Model 16 NC (SN 41344) was sold on 9-30-65.

First Facing and Centering machine (SN-46647) was sold on 10-27-65. In all, only ten of these machines were produced. The last being SN-51585 that was sold on 6-9-88.

New medium duty engine lathe introduced at the 1965 tool show. This machine was originally named Spartan (SN-47514) and was completed 6-3-65. This machine was renamed Merit with the building of Sn-47767 started on 2-18-66. The last Merit (SN-51500) was sold on 6-14-74 with 182 machines having been shipped.

The Series 50 manual lathe, which would eventually replace the Series K Kompact Lathe, was developed. The first machine sold was SN-47510 on 10-29-65. The last machine sold was SN-51778 on 1-77. A total of 199 Series 50 were to be built.

All the above-mentioned machines plus the Series 220 were shown at the 1965 Chicago Machine Tool Show.

1966*: First Series 220NC (SN-47759) was sold on 12-30-66. This was the first vertical bed lathe, purposely built to use NC controls designed by Monarch. The vertical bed has better chip flow over conventional flat bed lathes, which was an asset with the larger amount of chips being produced quicker. The Series 220 was still being sold in 1997 with over 150 having been shipped.

Monarch files patent 3,414,019, Electro-Fluid Control System, invented by **Nagel Gusching**, on 5-10-1966, and this patent was approved on 12-2-1968. The patent pertained to automatic shifting a lathe headstock gears.

1967: First Series 10NC (SN-47802) was sold on 12-27-67. The last Series 10NC (SN-52216) was 101 of this typed built and shipped 6-21-79.

Model 24NC Introduced.

1968: First Model 24NC (SN-49241) was sold on 6-28-68. The 36th and last Model 24NC (SN-52154) was shipped on 11-30-73.

Purchased Stamco located in New Bremen, OH, September 19. This would become Monarch Stamco Division, building metal coiling and sheet processing equipment. Stamco was incorporated in 1918.

New Cortland plant built.

1969: Monarch purchased COMEC located near Paris, France. COMEC, was a licensee of Stamco. COMEC was founded in 1956.

Late in the year, establish ComServe, computer software group for the development of manufacturing support software. ComServe was located in the Boston area.

Sidney's floor space totaled 380,000 sq ft.

In August, the 60,000 monarch lathe was shipped.

1970*: The first Model 75NC (SN-51110) was sold 11-30-70. The 234th and last Model 75NC (SN-52389) was shipped 5-31-79.

The first HMC (Horizontal Machining Center) SN-50059 was sold on 9-30-70. The 33rd and last HMC was sold on 5-86.

Monarch files patent 3,709,377, Tool Changer, invented by **Walter Sturm** and **Claude Doll**, on 7-31-1970, and this patent was approved on 1-9-1973. This patent pertained to the tool changer used on the HMC built in Sidney.

1971*: European sells and service office opened open in Hemsbach, West Germany.

Stamco UK LTD, Walsall, Stafforshire, England is established.

Monarch files patent 3,711,212, Travel Limit Mechanism and Method, invented by **Kermit Kuck**, on 2-19-1971, and this patent was approved on 1-16-1973, and pertained to a tool setting system for HMC.

Monarch files patent 3,813,745, Dual Turret Lathe, invented by **Kermit Kuck** and **Nagle Gushing**, on 9-16-1971, and this patent was approved on 6-4-1974.

1973: First Model 110NC (SN-51102) was sold on 5-31-73. The 19th and last Model 110NC (SN-52154) was shipped 7-31-78.

The first Series 150NC (SN-50850) was sold 5-31-73. In 1997, the Series 150 was still being sold with over 60 being built.

1974: Dean, Smith and Grace of Keighley, West Yorkshire, England was purchased. This will become Monarch's D, S & G division. D, S & G is an old European builder of lathes being found in 1865. D, S, & G also gave Monarch its own foundry, which would supply a large portion of the castings for both Sidney and Cortland divisions.

1975: The first TC series of machines was sold on 3-31-75. This was a TC-1 (SN-51428), which was sold on 3-31-75. TC-1's were still in production in 1997 with over 240 machines having been built.

The first TC-2 (G-51427) was sold on 8-27-75. The TC-2's were still being built in 1997 with over 50 machines having been built.

The Series 610 and 612 were combined into the Series 613. The Series 613 combine the most common options and the narrow bed 610 for the model 1610 and 2013 and the wider bed 612 for the model 2416 and the 2818. One of the last Series 613 (SN-52832) was shipped 3-19-80, with an unknown number having been built.

Monarch files patent 4,075,753, Plural slide Machine, invented by **Kermit Kuck** and **Nagel Gushing**, on 10-17-1975, and this patent was approved on 2-28-1978, and pertained to the twin tool tables found on the HMC250.

Mid 1970's: Monarch remodels the office space in the Sidney plant.

1976*: The first TC-3 (SN-51769) was sold on 6-22-76. The TC-3's were still being offered for sale in 1997 with over 23 having been shipped.

The first TC-4 (SN-51693) was sold on 10-29-76. The TC-4 was still being offered for sale in 1997 with over 25 having been shipped.

Patent for HMC-multi-table slide submitted (granted 2-28-1978).

1977*: The first HMC-250 (SN-53044) was sold on 9-21-78. The 20th and last was shipped on 1-29-86.

Monarch files patent 4,122,597, Tool Utilization Mechanism, invented by **Nagel Gushing** and **Ralph Prescott**, on 5-2-1977, and this patent was approved on 10-31-1978.

1978: Monarch entered into a licensing agreement build large vertical turning lathes (VTL) with Comau Industries of Italia. Comau supplied the base machine and Monarch finished the machine by adding CNC controls, enclosures, and tooling.

The first HMC-200 was sold 6-21-77. Only SN-51555, SN-51556 and SN-52687 were built with SN-52687 being shipped on 1-23-81.

A new machine concept was started. This would eventually result in the C-line of prototypes built in the early to mid 80's.

1979*: The Series 614 was introduced to take the place of the Series 613. The Series 614 was similar to the Series 612. It had a motor in base design, and many of the popular options of the 612 were made standard on the 614. The Series 614 was only offered in two models the 2013 and the 2818. The first Series 614 (SN-52826 and SN-52827) was sold on 3-17-80. Series 614 were still being built in 1997.

Monarch files patent 4,300,418, Tool Turret Mechanism, invented by **Nagle Gusching** and **Ted Wagner**, on 11-28-1979, and this patent was approved on 11-17-1981, and pertained to the tool turret found on the C-line prototypes.

Toney Niemeyer named as president with **Kermit Kuck** remaining as CEO. Niemeyer previously held the position of V.P. Strip processing since 1978, and a member of the board of directors since 1975.

Sidney's floor space totaled 393,000 sq ft.

1981: The first Metalist (SN-52892) was sold on 3-24-81. The Metalist was one of the best selling CNC machines for Monarch with a version being built by the company's D.S. and G. division in England. Production continued through 1997 with nearly 300 lathes being built.

The 81P lathe was developed for the oil field industry. This was a derivative of the Series 81 with a 3-speed range variable speed headstock and oversized through hole. None are know to have been sold, or built.

The Monarch Machine Tool Company and its four divisions top $140 million in sells.

Comec is liquidated in France. All of Stamco's European operations moved to Stamco UK.

Kermit Kuck returns as president and CEO after the departure of **Toney Niemeyer** (the exact date when this happen is not known).

1982: The first TC-1A (SN-53066) was sold on 12-9-82. The TC-1A was offer for sale through 1997 with over 35 having been built.

The Alpha robotic system was developed to automatically load and unload different models of CNC lathes.

Howard W. Geyer is named new President and CEO. **Kermit Kuck** retires, but remains chairman of Executive committee and president of the Monarch Foundation.

1983*: The C-400 (SN-53331) prototype was completed. This was the first machine resulting from the design project started in the late 70's. This was 32" swing over the slant bed, and 60" between centers universal CNC lathe. It had a three-speed range 75 hp headstock, and a *patented* interference free disc tool turret. Spindle speeds were 20 to 2000 rpm and maximum chuck size was 21". Only this prototype was manufactured, and it was scraped in 1989.

The C-300 (SN-53270) was started 3-25-83. This was the same as the C-400 but a 1/3 reduction in size. It was a 15" swing by 48" center distance universal slant bed machine having a 50 hp 3-speed headstock with spindle speed of 20 to 3000 rpm and max chuck size of 15". This was the only machine of this type made, and it was scraped in 1989.

A 24,450 sq. ft. high bay addition to the north end of the Sidney plant was completed. This addition will aid in building the large VTLs. This addition brings total floor space to 440,000 sq ft on 11 acres.

Howard Geyer is forced to resign in June, and **Kermit Kuck** resumes head of Monarch as CEO. Monarch is not to have a president until 1988.

1984: The replacement for the Series 10 was introduced at the '84 machine tool show. This machine (SN-53367) was started 3-20-84, and was called the C-10.

1985*: The first Metalist 1A (SN-53463) was sold 4-30-85. There have been over 30 of these machines built and was still in production in 1997.

The first C-10 (SN-53429) was sold on 11-27-85. There were over 60 C-10's built when production ended in the early 90's. The C-10 was the first Monarch slant bed lathe to be sold.

Monarch files patent 4,604,810, Post Process Diameter Gage, invented by **Nagle Gusching** and **Richard Daulton**, on 8-29-1985, and this patent was approved on 8-12-1986, and pertained to the post process gauging system for CNC Robotic Turning Cells.

1986*: The C-200 (SN-53586) prototype was started. This machine was the same as the C-400 and C-300 but was reduced in size by 1/3 from the C-300. It was a 10" x 36" center distance slant bed lathe machine with a 30 hp three-speed headstock with spindle speeds from 40 to 4000 rpm. This machine was also scraped in 1989 along with the C-300 and C-400.

Monarch files patent 4,736,512, Tool and Work Changer Assembly, invented by **Nagle Gusching** and **Richard Daulton**, on 8-29-1986, and this patent was approved on 4-12-1988, and pertained to the company's robotic turning cell.

1987*: Monarch files patent 4,827,801, Offset Indexable Fixture, invented by **Nagle Gusching**, on 5-6-1987, and this patent was approved on 5-9-1989.

1988*: The first Medallion (SN-53713) was sold on 3-10-88. This was a smaller version of the Metalist with an 8" or 10" chuck capacity.

Monarch files patent 4,856,156, Spindle Mechanism, invented by Nagle Gusching, on 10-26-1988, and this patent was approved on 8-15-1989.

Kermit Kuck retires as president and CEO. **Robert J. Siewert** named new president and CEO. Siewert comes to Monarch from Motch and before that Giddens and Lewis.

1989*: Model 92 prototype of the Ultra-Center was started in July of 1989. This machine (SN-53909) was shown at IMTS in Aug. of 1990. After the show, this machine went into Monarch's own shop for production work. This machine had Monarch's patent turret changer, which allowed complete changing of the 10 (40 VDI) or 12 (30 VDI) tool turret disc in 15 seconds. It was also Monarch's first opposing spindle 4-axis machine which allow for complete machining of a part. It was designed to be built in modular and could be configured up to 14 different way and was offered in either a 40"center distance or 72" center distance, and had and 6"a2 spindle or an 8'A2 spindle of with 30 hp or 50hp (left main headstock) and 20 or 25 hp for the right or subhead.

Turret changer patent as used in the Ultra-Center is submitted (granted 2-18-1992).

Monarch files patent 5,007,151, Machine Tool Turret, invented by **Nagle Gusching**, on 8-3-1989, and this patent was approved on 4-16-1991.

October, **Kermit Kuck** dies of cancer.

Monarch purchases adjourning lot to bring total to 13 acres. Monarch has old structures torn down on property.

1990*: Monarch files patent 5,033,340, Apparatus and Method for Tool Vibration Damping, invented by **Larry Siefring**, on 1-22-1990, and this patent was approved on 7-23-1991, and pertained to a method holding and using extremely long boring bars (over 10x1 ratio) without developing chatter while cutting.

Monarch files patent 5,088,182, Turret Changer, invented by **Ted Wagner** and **Christopher Sanderson** (from DSG), on 9-20-1990, and this patent was approved on 2-18-1992, and pertained to the turret changing system used on the Ultra-Center machines. This would be the last patent awarded to the Sidney division.

---- **Nagel Gusching** retires from the board of directors. Gusching came to Monarch in 1948. During his years at Monarch, he played a key roll in engineering and product development, and was awarded more patents than any other Monarch employee with a total of 11+. In 1967 he was appointed V.P. of Engineering and went on to become executive vice president, before semi-retiring in 1986. After retiring, he continued to work as special consulted were he continued to develop new designs. He became a member of the board of directors in 1981.

1991*: The first Ultra-Center (SN-54078) was sold on 3-27-91, and was shipped 5-92. This machine was 72" single spindle 2-axis machine equipped with an Alpha loader for loading between center parts.

The first Ultra-Center shipped (SN-53934) and was shipped 4-92. This was a single spindle 2-axis chucker.

As of 1997, there were nearly 80 of these machines built including 14 special versions used in several axial turning transfer lines.

1992*: In July Monarch purchased the parts, inventory, engineering records, tooling, patents, trademark, copyrights and trade name of the Lodge & Shipley Co. of Cincinnati, Ohio. This allowed Monarch to continue to manufacture several lines of Lodge and Shipley lathes, as well as filling requests for repair parts and service for this old line machine builder.

December, 11, announced the closing and sell of Dean, Smith and Grace facility. DSG. Lathe Ltd purchased assets on April 5 1993. DSG Lathe is a privately owned company located in Keighley, W. Yorkshire, UK, would continues to build, new manual and CNC lathes as well as rebuilding older lathes, and supplying spare parts and service.

1993: First Lodge and Shipley machine built with a Monarch serial number was SN-54117. This was an AVS 2013 x 30" center distance shipped 12-13-93.

Monarch builds new Lodge and Shipley AVS, Superturn and Powerturn, and continues to supply repair parts for all of Lodge and Shipley manual and CNC lathes.

1994: Monarch introduced the first Predator CNC lathe at IMTS. The Dean Smith and Grace division starting in 1992 originally developed this machine. Six prototypes were built in England with 2 being shipped to Sidney. After the closing and sell of D.S. & G. Monarch Sidney re-engineered (Americanized) this fine machine, and offered it for sale by the end of the year.

The Predator has a standard 6"A2 spindle with a 3" bore for an 8" (10" optional) chuck. It had a single speed spindle of 15/20 hp having 4000 rpm (5000 rpm optional). It was constructed of cost iron, and had a 30-degree slant bed. The optional tailstock allowed up to 24" long parts to be turned. Swing over bed was 20.5"; swing over carriage was 12.2" and max. turned diameter was 8". The Predator could be built as a chucker, universal (with tailstock), or with sub-spindle. All Predators could be equipped with powered rotary tooling (PRT) coupled with either a 72-degree spindle positioner, or 360,000 degree C-axis.

The first Predator to be sold was SN-541189 to Hillard Corporation.
By 11-16-94 three Predators had been shipped. By 1997, nearly 200 of these machines in all versions had been built.

The Expeditor 220 was offered for sale. This was updated 220 with a single tool mounted in a rotating powered tool holder for contour milling. It also had a robotic tool changer. None of these machines were sold.

1995: Monarch purchases Bush GmbH & Company, Dueren, Germany. Purchase includes inventory, trademarks, trade names, technical drawings and know how. Bush manufactures paper processing equipment.

Predator Plus – high torque version of the Predator introduced, along with Predator Y-axis.

1996: May 13, **Robert Siewert** resigned as president and CEO. **David Lundee** appointed acting president and CEO. Lundee, a director of the company and former VP and head of the Cortland Division till his retirement in 1994. Lundee started with Monarch in 1954.

November 16, **James Gilgenbach** named as general manager of Sidney division. Gilgenbach came to Monarch from Giddens and Lewis.

1997: The Predator 12 was introduced in June of 1997. This machine was started in December of 1996 and was an upsized version of the Predator (now called Predator 10) using the same bed and base. It had a new 35 hp single speed

headstock of 3200 rpm (4000 rpm optional) with an 8"A2 spindle having a 4" through hole which allowed for 3.5" bar work with a 10" chuck or 4" with the standard 12" chuck. By the end of 1997 there where 8 of these machines shipped. This would the last new designed lathe produced by Monarch Machine, and the lead engineer of this lathe is the author of this history.

March 10, **Richard E. Clemens** named president and CEO. Clemens came from Frick Company division of York International, and before that Clark Material Handling Company.

July of 1997 the employees of the Sidney division of The Monarch Machine Tool Company were given notice that the division was going to be closed, if no buyer could be found.

August 1, Lucus Precision of Cleveland, and management finalized purchase of Sidney division for $10 million, and renamed it Monarch Lathes LP. James Gilgenbach is named president and general manager, and Monarch Lathes hires 60 former Monarch employees. Monarch Lathe LP is caring the traditions of the Monarch Machine Co. and the Lodge and Shipley Co., building new lathes, rebuilding, and servicing older models in the same location of the original Monarch Machine Co.

September, Monarch Machine Tool Company signs agreement with Spinner of Sauerlach, Germany to sell each other's products in their home markets. Spinner builds precision lathes.

1998: Monarch's headquarters was relocated to Dayton, Ohio. Monarch Machine Tool Company was renamed Geneses World Wide and concentrated on its Coil processing divisions. Monarch Cortland was now called the Monarch Machine Tool division.

GFG of Milwaukee, WI, is purchased. GFG specializes in coil coating equipment.

1999: Purchased Herr-Voss of Callery, PA. Herr-Voss was a chief competitor of Stamco.

2000: Genesis World Wide sold off the Monarch Machine Tool division to a New York investment group. Monarch Machine now is headquartered and operates out of Courtland, NY building vertical milling machines.

Mid year saw the beginning of a major downturn in the machine tool industry, this would result in the worst machine tool recession since the great depression.

2001: Genesis World Wide files for chapter 11 protection and was sold to an investment group. Its headquarters was relocated Callery, PA. The company

was renamed Genesis World Wide II and is comprised of Herr-Voss, Stamco and GFG with **Walter Stasik** replacing Clemens as president. Clemens would go on to become president of Bridgeport Machine Tool, Bridgeport, CT. Bridgeport would file for bankruptcy in 2003(?).

This effectively ends the History of The Monarch Machine Tool Company after 92 years. Four companies have now descended from the original Monarch. They are Monarch Machine Tool Company, Cortland, NY; Monarch Lathes LP, Sidney, OH (division of Lucas precision); DSG Lathes, Keighley, England; and Genesis World Wide II.

WHY DID MONARCH FAIL?

Many might look to the last two presidents and lay the total blame on their doorsteps. However, the truth lies deeper. As Monarch entered the 1980's, the company was experiencing a period of record profits. The balance sheet, though, did not show the trouble that was simmering. There was a very long and nasty strike starting in 1975 and running into 1976. Much of Monarch success was its tradition of promoting from within. This strike started a trend of many talented younger works leaving the company. Then in 1979, Monarch's long time president, Kermit Kuck, retired, but kept his hand on the company by retaining his position on the board of directors. Mr. Kuck had a very demanding personality. He wanted things done his way. In his younger years, he had innate instinct for the machine tool industry and the direction it would go, and was able to position Monarch in position of leadership. Through his efforts diversifying the company, he created a financially strong and more secure company, and for this much credit must be given to him. But in his latter years, he no longer had the vision he once had, and would not allow the managers that had been groomed to replace him to lead the company. In a span of three years, he had two presidents removed. Along with these men, many middle managers, and experienced shop hands started to leave. Then hit the depression that struck the machine tool industry starting in 1981.

During the great depression of the 1930's, Wendell Whipp and Clearance Bickel in engineering, embarked on a course of innovation. This innovation was not just building better lathes, but exploring ways to produce affordable yet highly productive machines. They focused their efforts on lathes that could reliably and repeatedly produce complex shapes, which resulted with innovations in tracer controls, and mechanical form machining. The Monarch-Keller form turning machines, the Magna-matic and ShapeMaster are examples of revolutionary machines designed and produced in this period. Contrast, Kermit Kuck allowed Monarch to become stagnate. A new series of CNC machine build developed from a "clean sheet", and would be known as the C-line would have its specifications repeatedly changed to stay abreast of developments made by other builders. Though its machine line up would constantly be upgraded with the latest controls, which allowed for increases in performance, the original iron was designed in the 60's and 70's. With slow sales, wages were frozen and other fiscal

measure where taken to prevent losses, increased the drain of personnel. The ranks of seasoned engineers were thinned. Traditionally it would have been these engineers that would create new machines, but that ability too was dulled.

Monarch was a vertically organized company. They produced their own casting through their foundery operated by Dean, Smith and Grace. They manufactured nearly all the parts of their machines, including heat treating, plating, and finishing. They even made there own ballscrews. Purchased components went through cycle testing before they were approved for use. Though Monarch did not build their own control, they did make their own spindle drives, and other electrical components. Sheet metal and weldments were the only items sourced from local shops. After years of success a company starts to think, that if Monarch did not make it it does not exists. Mr. Kuck in many ways fostered this notion, which lead to "group think" in the company, and blinded many to the quickly changing realities.

In 1984, the C-10 was introduced as a replacement for the Series 10. It would take several years of teething pain before this machine would be truly sound, but by that time, it was too expensive for the market. In 1986, Monarch would build its Metalist turning cell, with post processing gauge, and tool and part changing robotics. This cell would be shown at the 1986 IMTS and drew much attention but no orders. Many other lathe builders were also offering their own turning cells, most of which cost less than the Monarch. During this time, Monarch consolidated it manual machine models, but saw sharp decrease in sales of these machines, except for the U. S. government. The three C-line prototypes where built, and tested, and after ten years of development, they were deemed too expensive, and not what customers wanted.

By 1990, Monarch's Sidney plant was half what it was in 1980. Robert J. Siewert was now president and CEO. He was a man of great ideas, but poor execution. Mr. Siewert was a product of Giddens and Lewis, and moved to incorporate his way of doing things. Many more experienced, long-time Monarch managers were replaced by managers from other former machine builders. Siewert's great vision was for the Ultra-Center. Siewert's greatest failure was the Ultra-Center. The Ultra-Centers was revolutionary in its ability to be able to change over from job to job in five minutes or less. Its building block configuration allowed it to easily be built to customers needs, and enabled its manufacture to be streamed lined. With its introduction at the 1990 IMTS it shocked the industry, and was poisided to take a large market share. Everyone wait to see if Monarch could now produce this machine.

The first Ultra-Center did not ship until April of 1992. Customers where enthused with its performance, but not with its reliability. Early models only had an 80% up time. Despite this poor reliability, one mold producer end up buying five, and was reporting a pay off of these $500,000 machines in just over 6 months through the increase in productivity. Other orders were received, but word quickly spread of the Ultra-Centers poor reliability. Monarch was soon spending more in warranty claims for these machines than they made in profits. In 1995, Siewert started to bring in a new management team.

Production on the Ultra-Center was halted until the problems where fixed, but by this time the damaged was done.

In 1990 Siewert instructed Monarch's English lathe division (Dean Smith and Grace) to start development of a new CNC lathe with an 8" chuck. This resulted in the Slant 200. D.S. & G would build approximately eight of these machines before they where closed at the end of 1992. This design was then brought to the Sidney division and re-engineered for the U. S. production and renamed the Predator. The Predator would prove to be a highly successful machine, but sales would be limited by Monarchs failure to aggressively market what many users consider one of the finest American made CNC lathe of the 1990's. Mr. Siewert's other bright moment was with the purchase of the intellectual assets of Lodge and Shipley for one million dollars.

Monarch though, was loosing money and in May of 1996, Robert Siewert was in effect fired as president and CEO. David Lundee, the former head of Monarch's Cortland division came out of retirement to head Monarch until a new president was found. James Gilgenbach was named as Sidney's general manager. 1996 ended with the Sidney division having sales exceeding $22 million, but still ended in the red. Lundee and Gilgenbach uncovered that under Siewert, the product price structure was changed to make Monarch products more price completive, but this was done without fully knowing the actual cost to build these machines. Traditionally the Sidney's division breakeven point was thought to be $20 million in sales, but in fact it was more like $23 million. Lundee and Gilgenbach set about to correct the manufacturing and other internal problems. Kass Reda, now head of engineering was aggressively developing new machine designs starting with the larger Predator, the 12" chuck Predator 12. Things were looking bright when Monarch's next president arrived.

In March of 1997, Richard E. Clemens named president and CEO of The Monarch Machine Tool Company. Clemens came from Frick Company division of York International, and before that Clark Material Handling Company. Clemens was known as a turn around expert, but found Monarch in worst shape than he originally realized. He needed to get Monarch quickly in the black, and instead of investing into modernizing the Sidney and Cortland facilities, or consolidate the machine tool operations in the under utilized Sidney plant, he choose to get out of the lathe building business. He looked to the highly profitable Stamco division to be the new core of the company, and executed a plan to expand this part of the business.

He did this starting in July of 1997 with the announcement of the closure of the Sidney Division and the eventual sell of the intellectual property to Monarch Lathe LLC. In 1998 he moved the headquarters of Monarch to Dayton, Ohio and changed its name to Geneses World Wide, and changing the name of Monarch Cortland to the Monarch Machine Tool Co. In addition, in that year Geneses acquired GFC in Milwaukee WI. In 1999, Stamco's chief competitor, Herr-Voss was purchased. To help pay for this purchase, Monarch Machine was sold off to an investment group. However, with the crash of the Machine Tool market in 2000, this proved to be too little to balance Geneses debt load. Geneses spiraled into chapter 11 by the end of 2001.

The failure of Monarch came at its own hand. Monarch was built on a foundation of quality and timely innovation in both product design and manufacturing. It maintained this foundation through a long chain of dedicated employees who spent their careers learning and then practicing their art. It was quite common to see three generations of a family working together. Machinist kept detail notes on how to machine critical parts; these notes were then passed on to their successor. With the breaking of this chain, Monarch started to slip. With failure to see the direction manufacturing was going and to respond with the machines and pricing to head off competition, Monarch started to slide. Panic now set in and quality was reduced and the slides steepen, only to be halted by a return to Monarch's core values. In the end though, an outsider who had no ties with Monarch's history or the community in which it flourished, but only a responsibility to the shareholders sold her out.

Could the Sidney plant have been saved? Yes! Especially with the course they were on in 1997. It is questionable if Sidney would have had been strong enough to weather the rough economic times from 2000 to 2004, but it would have had a fighting chance given the strength of the corporation, but this is something we will never know.

End of History

A note about the author:

He joined Monarch Sidney in July of 1987 after graduating from Tri-State University with a degree in Mechanical Engineering. He worked in the engineering department assigned to the new product development group. Initially he was assigned to work on the New C-line of CNC machines, and after the cancellation of this project, he worked on the development of the Ultra-Center series of lathes. In 1992, he was appointed project engineer of the Series 614 and manual rebuilds. He also played a key roll in the engineering of the Predator line of lathes. In 1996, he was place in charge of engineering new products and was project engineer and manager for the Predator 12, the last Monarch lathe to be designed and built in Sidney. He left Monarch in July of 1997 for W. A. Whitney of Rockford, IL.

The author always had a passion for history, and during his 10 years at Monarch combed engineering records to piece together the company history. This research led him to the unpublished history of Monarch, which was prepared for the 75th anniversary of the company. This timeline history is collimation of this research with much taken from this unpublished history, whose nameless author is held with great gratitude. Much of the rest of this history has been taken from actual lathe engineering folders, which Monarch has for every machine built since 1927, and from company literature and brochures as well as personal notes made, by former Monarch employees. The author wants to thank all who help with this history, and asks continual input to help make this history as complete and accurate as possible.

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