



*SETTING THE STANDARD*

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# A Century of Manufacturing in ASME

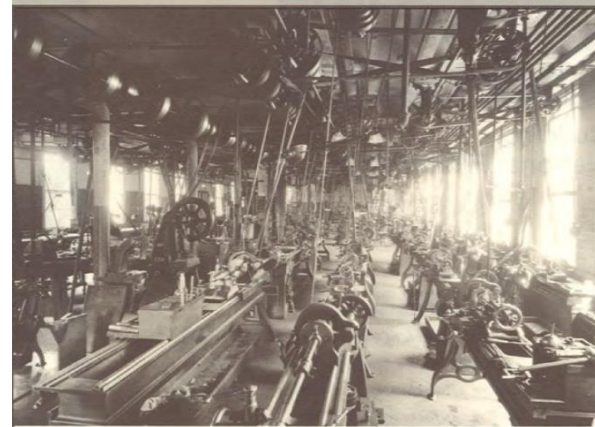


Warren R. DeVries, Honorary Member, ASME  
Professor and Dean Emeritus  
UMBC

# In The Beginning (1880-1920)

## What in the World?

- “EDISON’S ELECTRIC LIGHT, CONFLICTING STATEMENTS AS TO ITS UTILITY” New York Times, December 28, 1879
- “THE CHINESE BILL PASSED” New York Times, March 10, 1882
- “400,000 CHEER SUFFRAGE MARCHERS” New York Times, November 10, 1912.
- “GIVES \$10,000,000 TO 26,000 EMPLOYEES” New York Times, January 6, 2014
- “ARMISTICE SIGNED, END OF THE WAR!...” New York Times, November 11, 2018



**Production  
Engineering  
Shops at  
the  
University  
of Michigan**

## Technical and Division Focus

- Mechanization and machines, organizing and planning work.
- *ASME Transactions* published as a single leather-bound volume that documented both the business of the Society, and knowledge of its members, mainly practioners.

## Leaders

- Worcester R. Warner (17<sup>th</sup>) and Ambrose Swasey (23<sup>rd</sup>) were ASME President and 2 of the founders of ASME in 1880. They founded Warner & Swasey, known for its turning machines (and building over 40 refracting telescopes around the world)
- F.W. Taylor, ASME’s 25<sup>th</sup> President, works manager for Bethlehem Steel. “On The Art of Cutting Metal” (an entire issue of the *ASME Transactions*), *Principles of Scientific Management*, and co-inventor of HSS.

# The Roaring Twenties, Depression and War (1920-44)

## What in the World?

- “LINDBERG DOES IT;...” New York Times, May 22, 1927.
- The Great Depression: GDP fell by an estimated 15%., International trade plunged by 50%, and Unemployment in the U.S. rose to 25% (in some countries as high as 33%.)
- As the “arsenal of democracy”, productivity, scale up, produce two-thirds of all Allied materiel: 80k tanks, 2.5M trucks, 0.5 M jeeps, 286k warplanes, 8.8 k naval and 5.6 merchant vessels, 2.6 M machine guns, 41 B rounds of ammunition, and designed and built the B-29 Superfortresses and the atomic bomb..

## Technical and Division Focus

- New materials to process and machine tools, mostly for machining.
- Formal education along with practical experience.



O.W Boston on right, and a protégé, Les Colwell demonstrating a new machining concept

## Leaders

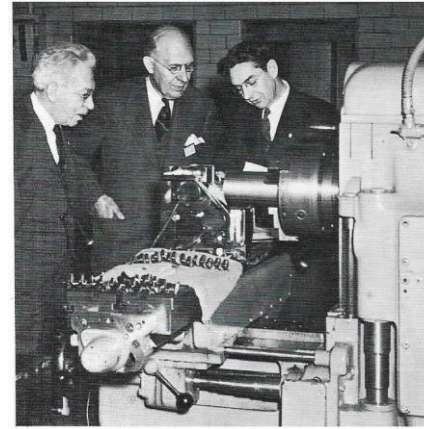
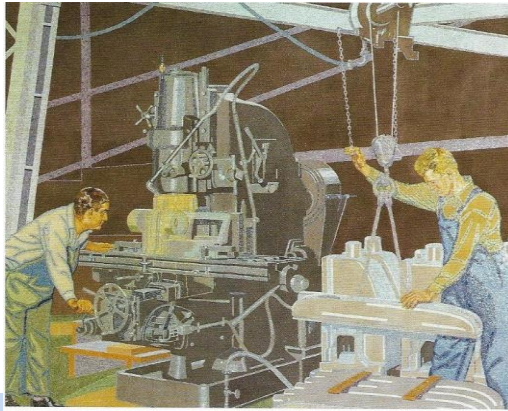
- Orlan W. Boston established Michigan’s Production Engineering Department (1923).
- ASME’s Machine Shops Division, established, along with 4 other technical divisions, Boston is second Division Chair.

# The Roaring Twenties, Depression and War (1920-44)

## A Shout out to Cincinnati

- Cincinnati Milling Machine Co. (“the Mill”) and the University of Cincinnati establish a “graduate co-op program”. Some early beneficiaries: Milton Shaw, M.E. Merchant, R.S. Hahn, Mike Field, as well as Serope Kalpakian and Richard Kegg.
- Ironically, during this decade, Cincinnati Milling Machine Co. became the largest machine tool builder in the world - its biggest customer – the Soviet Union.

**Mural  
originally in  
Cincinnati  
Union Station**



Left to right: Sol Einstein, VP of Research for the Mill, Charles Kettering, Director of Research for GM, and Hans Ernst, Director of Research for the Mill.

## Leaders

- Sol Einstein (reputed to be a distant cousin of Albert) was the longest serving Division Chair with 3 non-consecutive terms. However, during the Depression, decade, 1930-40, there is no record of a Division Chair.
- In 1940, the division’s name changed to Production Engineering Division (PED).

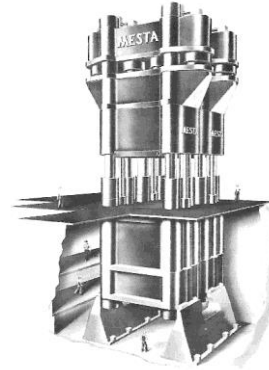
# Hot to Cold War and the Moon (1945-69)

## What in the World?

- Many returning military, took advantage of the GI Bill, often choosing engineering, leading to tremendous increases in engineering enrollments.
- President Truman signed the bill creating the National Science Foundation on May 10, 1950.
- “MEN WALK ON MOON ASTRONAUTS LAND ON PLAIN; COLLECT ROCKS, PLANT FLAG,” New York Times, July 21, 1969.

## Technical and Division Focus

- The Blackall Machine Tool and Gage Award established in 1954 by Frederick S. Blackall, Jr., Fellow and 77<sup>th</sup> President of ASME.
- A move to more engineering science and research. In manufacturing, this shows up some of the classical papers by Trigger and Chao, Shaw, Ernst & Merchant, Gilbert, Kobayashi, ... that appear in ASME. Surprisingly little on NC.
- In 1959, the *ASME Journal of Engineering for Industry*, today's *JMSE*, as part of ASME's scholarly publications: the *ASME Transactions*, *Journal of Applied Mechanics* (1885) and *Applied Mechanics Review* (1933).



ALCOA 50,000 ton hydraulic forging press – a spoil of war. (NHMEL)

## Leaders

- Two “graduates” of “the Mill” and UC become Division Chairs, Robert Hahn, of Heald Grinding Machine, and M. Eugene Merchant who was later President of CIRP and SME.
- Kearney & Trecker was another machine tool builder that supported PED leaders like “Alf” Schmidt, who was a graduate of O.W. Boston's program and later went to Penn State as a faculty member, and Inyong Ham, who completed his PhD at Wisconsin while working at K&T, subsequently joined the Penn State faculty, and was also a CIRP President.

# Growth and Change (1970-94)

## What in the World?

- “MINH SURRENDERS, VIETCONG IN SAIGON; 1,00+ AMERICANS AND 5,500 VIETNAMESE EVACUATED BY COPTER TO U.S. CARRIERS,” *New York Times*, April 30, 1975.
- In 1979, the NSF elevated the small engineering sciences division, to a separate Engineering directorate that included the SBIR programs.
- NSF establishes the Engineering Research Centers Program, and the Division of Design and Manufacture (DDM), the first time the word “manufacture” shows up on NSF’s organization chart.



1970 PED Executive Committee: Richard Lane, Chair; S.P. Rogacki, Vice Chair; R.J. Andrews, Papers Chair; and Marv DeVries, Secretary

## Technical and Division Focus

- First NAMRC (and small co-located PED Spring Meeting) in Hamilton, ON as a “grassroots” conference (1973). Key individuals: Jiri Tlustý, Marvin DeVries, William Rice and John Bollinger.
- ASME and SME enter into formal due diligence discussions on merger; no merger but collaboration continues.
- The division's first joint society award, the ASME/SME Merchant Medal established in 1987.

## Leaders

- ASME’s new Council structure, with a Council on Engineering, and a Manufacturing Technical Group, and Branimir Von Turkovich, a past PED Division Chair, as the first VP. “Brani” also served as an early Division Director for Design and Manufacture, and subsequently as President of CIRP. Subsequently a number of PED/MED division chairs served as NSF Program Directors.
- The first class of NSF ERCs includes the ERC on Near Net Shape Manufacture, directed by Taylan Altan at Ohio State, a past PED Division Chair, and the ERC on for Intelligent Manufacturing Systems at Purdue.

# Growth and Change (1970-94)

## What in the World?

- “U.S. AND CHINA OPENING FULL RELATIONS; TENG WILL VISIT WASHINGTON ON JAN.29,” *New York Times*, December 16, 1978.
- “JOYOUS EAST GERMANS POUR THROUGH WALL; PARTY PLEDGES FEEDOMS, AND CITY EXULTS,” *New York Times*, November 11, 1989.
- The Technology Reinvestment Project (TRP) as a peace dividend.

## Technical and Division Focus

- MTAMRI, one of several advanced manufacturing research institutes supported by TRP, focused on machine tools, integrating and sharing MED leader’s labs across the nation with the new technology of the Internet.
- The Division became responsible for appointing the Technical Editor for the *Journal of Engineering for Industry*, and appointed David Dornfeld after completing his term as Division Chair.
- In 1995 the Division’s name changed to Manufacturing Engineering Division (MED), and the *Journal of Engineering for Industry* was re-named and -aligned as the *Journal of Manufacturing Science & Engineering* with Shiv Kapoor as the new Technical Editor.



1991 PED Executive Committee: Dwight Blaser, Ming Leu, Miguel Martinez-Heath, Shiv Kapoor, and Nien Chao.

## Leaders

- Shiv Kapoor, as the MED Chair and subsequently the Manufacturing Group Vice President, was the key person in making the changes to the division’s name and journal. Subsequently, he chaired ASME’s publications committee and championed the cause for improving all ASME journals rankings in the Citation Index. He was elected an Honorary Member of ASME for his contributions.



# Into the New Millennium (1995-2019)

## What in the World?

- “U.S. ATTACKED: JETS DESTROY TWIN TOWERS AND HIT PENTAGON IN DAY OF TERROR,” *New York Times*, September 12, 2001.
- “BAILOUT PLAN: \$2.5 TRILLION AND A STRONG U.S. HAND,” *New York Times*, February 11, 2009.
- “NEW G.M. CHIEF STEPPING UP TO HANDLE SAFETY QUESTIONS,” *New York Times*, March 19, 2014.
- “NATIONS APPROVE LANDMARK CLIMATE DEAL,” *New York Times*, December 13, 2015.



Daniel T. Koenig was ASME's 114<sup>th</sup> President, the first (and so far only) former division chair (1980-81) to serve

## Technical and Division Focus

- The first co-located MSEC/ICM&P at Northwestern in 2008 and MSEC/NAMRC/ICM&P at Oregon State University in June 2011.
- MED inaugurates the Student Manufacturing Design Competition in 1995, with Robert Ivester from UMass Amherst the first 1st place winner.
- New ASME awards established: *Milton C. Shaw Manufacturing Research Medal (2011)*, *Chao and Trigger Young Manufacturing Engineer Award (2011)*, and *Kornel F. Ehmman Manufacturing Medal (2019)*.
- *ASME Journal of Micro and Nano Manufacturing* established in 2013 with *Jian Cao* as the inaugural Editor-in-Chief.



Finally, in 1998, MED has first female Division Chair, Gloria Wiens!

# Into the New Millennium (1995-2019)

## What in the World?

- “How Private Companies Are Changing The Future Of Space Exploration”, *WBUR*, Feb. 6, 2020.
- “IN A FIRST, RENEWABLE ENERGY IS POISED TO ECLIPSE COAL IN U.S.” *New York Times*, May 13, 2020.

## Technical and Division Focus

- MED leaders become active participants in ASME’s Federal Fellows Program. First were Mike Molnar and Tom Kurfess at OSTP.
- Advanced Manufacturing National Program Office established in 2013 to run Manufacturing USA (formerly National Network for Manufacturing Innovations).
- Nearly half of the AMNPO technical team have been past MED Division Chairs.



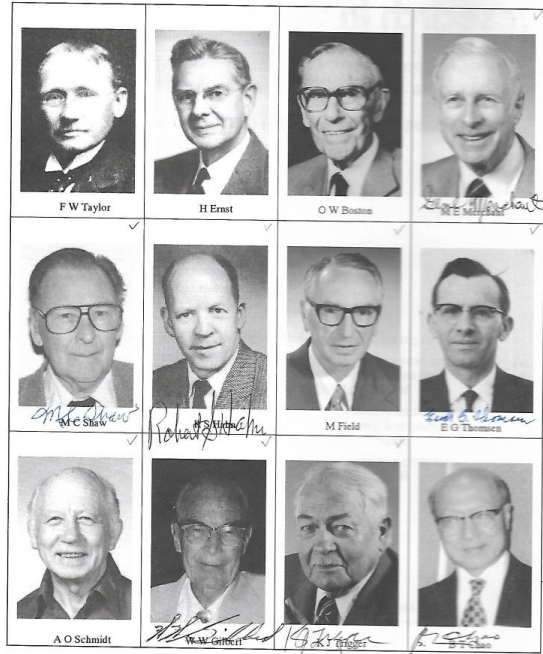
**Leaders:** AMNPO members at the MSEC / NAMRC 2019 in Erie, PA. Left to right (year MED chair): Hong Liang, Shawn Moylan (2018), Scott Smith (2005), Frank Gayle, Mike Molnar (2008), Albert Shih, Brad Kinsey (2014), Frank Pfefferkorn, Steve Schmid, Shreyes Melkote, ZJ Pei, and Kevin Chou (2019).

# A New Century for MED (2020 and beyond)

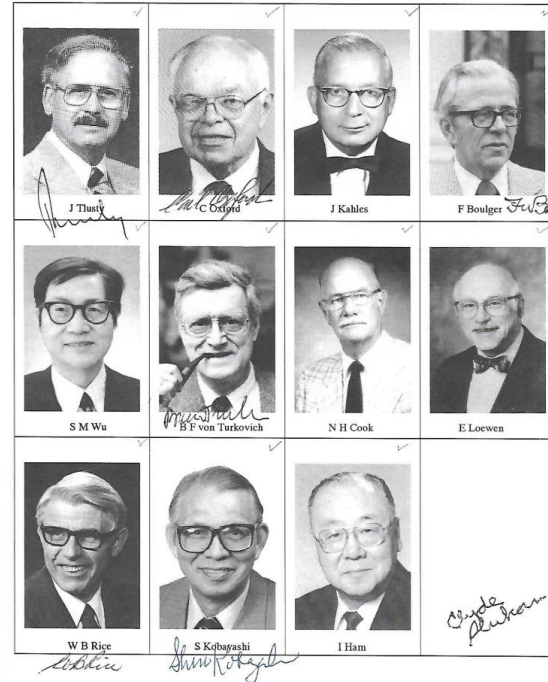
- Maintaining technical relevance in engineering science, technology and being open to manufacturing innovations.
- Professional relevance that goes beyond the technical, so that those engaged in MED advance their careers and influence, and have some fun at the same time.
- Develop a diverse cadre of leaders, not only for the division, but for ASME, business, government, and the community.

# Pioneers from the Past Century

PORTRAIT GALLERY OF THE PIONEERS



AND THEIR ASSOCIATES



# CHAIRS of the ASME Manufacturing Engineering Division (MED)

Founded in 1920 as the Machine Shop Division, name changed to  
Production Engineering Division (PED) in 1940, and changed to  
Manufacturing Engineering Division (MED) in 1995

Society Year	Division Chair	Society Year	Division Chair
<b>The "Roaring Twenties"</b>		<b>The War Years</b>	
1920-1921	W. A. Viall	1940-1941	A. M. Johnson
1921-1922	O. W. Boston	1941-1942	S. Einstein
1922-1923	F. O. Hoagland	1942-1943	S. Einstein
1923-1924	J. A. Smith	1943-1944	W. Seely
1924-1925	J. A. Smith	1944-1945	S. Einstein
1925-1926	W. F. Dixon	1945-1946	C .F. Kayan
1926-1927	J. W. Hook	1946-1947	A. C. Fegal
1927-1928	W. W. Tangeman	1947-1948	A. Weinselberg
1928-1929	L. C. Morrow	1948-1949	H. B. Lewis
1929-1930	W. J. Peets	1949-1950	L. A. Lachman
<b>The Great Depression</b>		<b>The Cold War</b>	
1930-1931	F. W. Spencer	1950-1951	W. H. Oldacre
1931-1932	B. P. Graves	1951-1952	N. E. Martolletti
1932-1933	R. E. W. Harrison	1952-1953	S. M. Weckstein
1933-1934	NA	1953-1954	F. H. Mc Berty
1934-1935	NA	1954-1955	L. C. Lander
1935-1936	NA	1955-1956	J. F. Young
1936-1937	NA	1956-1957	H. Sizer
1937-1938	N. N. Guddara	1957-1958	F. H. McBerty
1938-1939	G. E. Nordenholt	1958-1959	L. C. Lander, Jr
1939-1940	NA	1959-1960	J. F. Young

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The "Space Race"		Productivity and Quality	
1960-1961	R. S. Hahn	1980-1981	D. T. Koenig
1961-1962	A. O. Schmidt	1981-1982	J. T. Black
1962-1963	J. Haydock	1982-1983	R. P. McDermott
1963-1964	M. Eugene Merchant	1983-1984	K. J. Weinmann
1964-1965	E. A. Reed	1984-1985	D. A. Dornfield
1965-1966	W. F. Aller	1985-1986	W. R. DeVries
1966-1967	L. P. Tarasov	1986-1987	R. Komanduri
1967-1968	R. B. Larson	1987-1988	G. D. Lahoti
1968-1969	J. C. McGinnis, Jr	1988-1989	B. E. Klamecki
1969-1970	R. O. Lane	1989-1990	M. C. Leu
Looking across the Pacific		Global Enterprises	
1970-1971	S. P. Rogacki	1990-1991	M. R. Martinez-Heath
1971-1972	R. J. Andrews, Jr.	1991-1992	S. G. Kapoor
1972-1973	M. F. DeVries	1992-1993	D. A. Blaser
1973-1974	W. B. Rice	1993-1994	N. H. Chao
1974-1975	G. F. Helgesen	1994-1995	K. F. Ehmann
1975-1976	B. F. von Turkovich	1995-1996	W. E. Alzheimer
1976-1977	T. Altan	1996-1997	E. Kannatey-Asibu, Jr.
1977-1978	I. Ham	1997-1998	K. (Subbu) Subramanian
1978-1979	V. A. Tipnis	1998-1999	Gloria Wiens
1979-1980	S. Ramalingam	1999-2000	Jay Lee

**CHAIRS of the ASME Manufacturing Engineering Division (MED)**  
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**Production Engineering Division (PED) in 1940, and changed to**  
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Sustainability, Innovation and IT		Customized, Connected and Affordable	
2000-2001	John W. Sutherland	2010-2011	Lawrence Yao
2001-2002	Richard J. Furness	2011-2012	Matthew Bement
2002-2003	Amit Bagchi	2012-2013	Cedric Xia
2003-2004	Jun Ni	2013-2014	Brad L. Kinsey
2004-2005	Kevin Scott Smith	2014-2015	Xiaoping Yang
2005-2006	David Stephenson	2015-2016	Brian Paul
2006-2007	Steven Liang	2016-2018	Shawn Moylan
2007-2008	Michael Molnar	2018-2019	Kevin Chou
2008-2009	Jian Cao	2019-2020	Radu Pavel
2009-2010	Bin Wei	2020-2021	Laine Mears