

From the Early Days to the Future for AIME and SME



George Luxbacher, PE, PhD

President SME 2008

President AIME 2012, 2020

Deputy Associate Director for Mining

National Institute for Occupational Safety and Health

Office of Mine Safety and Health Research

May 16th, 2021
150th Anniversary





1920s



Post-1956



Flag - 1904



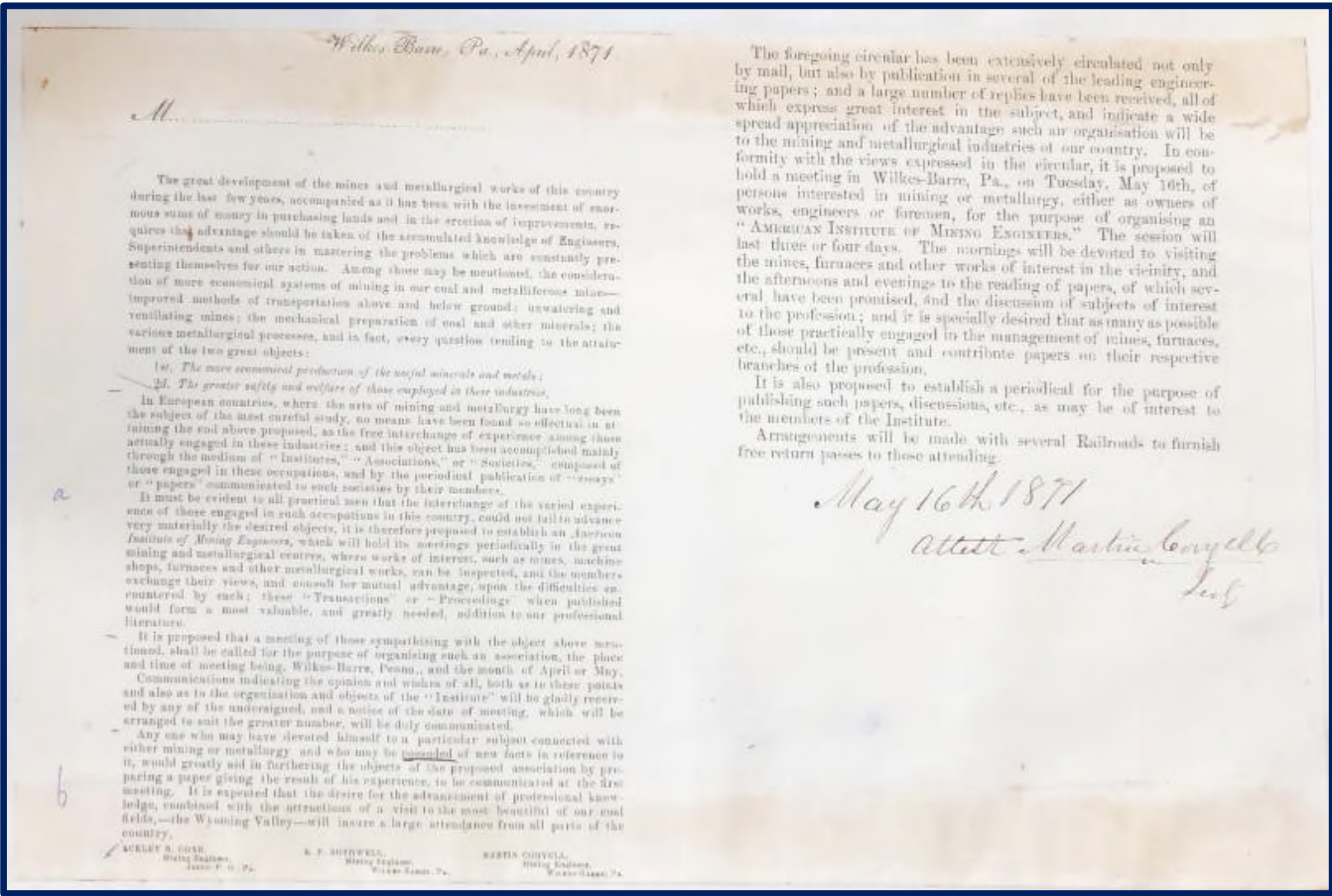
1971



2018



Attested copy – 1871 Meeting Announcement



Founding of AIME May 16, 1871
23 Mining Engineers

Thomas McNair's account of the first meeting

AMERICAN INSTITUTE OF MINING ENGINEERS ORGANIZED

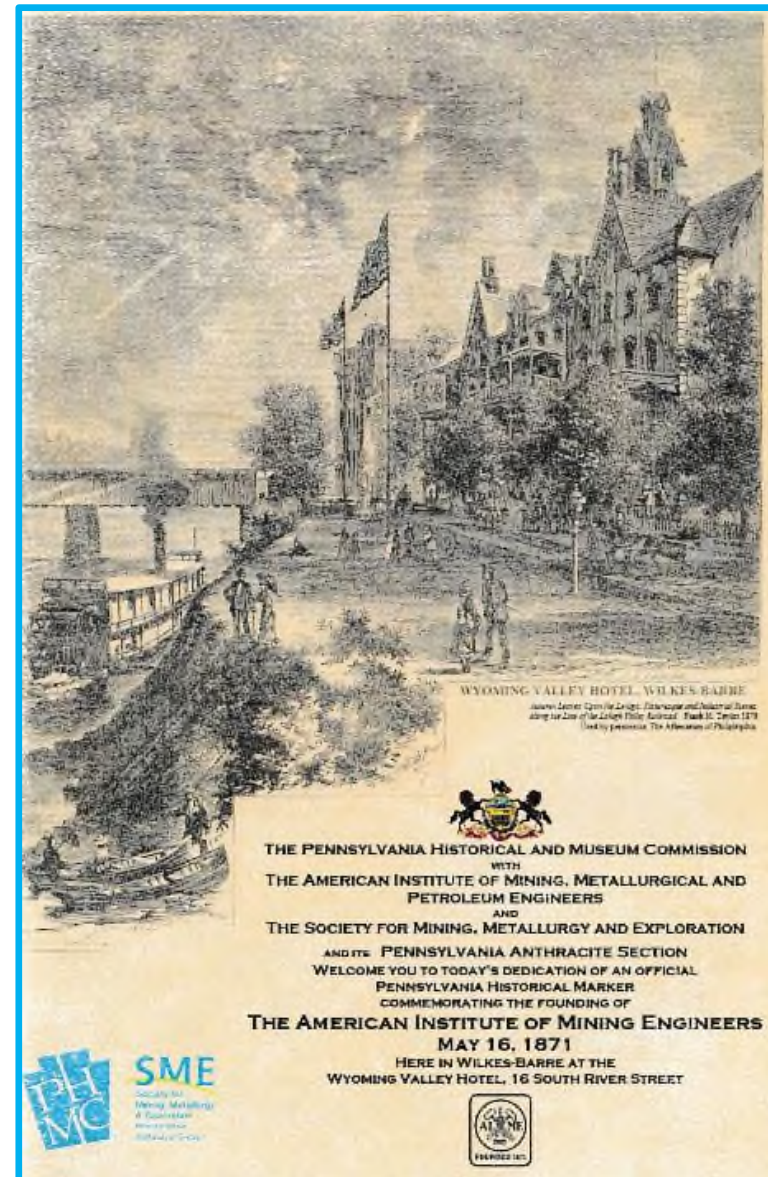
In this year (1871) the American Institute of Mining Engineers was organized. In this connection the following diary entries are of interest: "May 16 met R. P. Rothwell on my way from the cars [at Wilkes-Barre]. He gave me a printed copy of the proposed rules for government of the 'American Institute of Mining Engineers' and said that an informal meeting would be held at his office at 4 P.M. . . . Called at Rothwell's office on time. Found Daddow in alone. Others came in and matters were discussed and meeting fixed upon for evening. In evening met in clubroom of the Wyoming Valley Hotel and effected a preliminary organization. May 17. . . . Institute members visited Pleasant Valley (S. Meyers) mine in the morning. In the evening permanent organization was effected."

James B. McNair, *With Rod and Transit: The Engineering Career of Thomas McNair, 1824-1901*; Los Angeles, Private Publisher, 1951, page 117

1871 AIME

**Founded by 223 “mining”
engineers in Wilkes-Barre, PA
on Tuesday, May 16th, 1871**

- **29 members elected 5/17**
- **16 members elected 5/18**



The 23 “Mining Engineer” Founders

Adapted from Rossiter W. Raymond

- 14 colliery engineers, managers, and consultants;
- 2 “experts” in Lake Superior copper mining (Coryell and Petherick);
- 1 chemist/metallurgist (Drown);
- 1 educator (Silliman, Lafayette College; not including Rothwell who taught at Lehigh in addition to his consulting practice);
- 2 journalists from E&MJ (Raymond and Ward);
- 1 soon-to-be new graduate from Lehigh (the following month) (Drinker);
- 2 furnace operators (Neal and Bramwell) *(not highlighted by Raymond)*.

1871 AIME

68
7 Presidents
2 MHOF

Founded by 223 “mining” engineers in Wilkes-Barre, PA on Tuesday, May 16th, 1871

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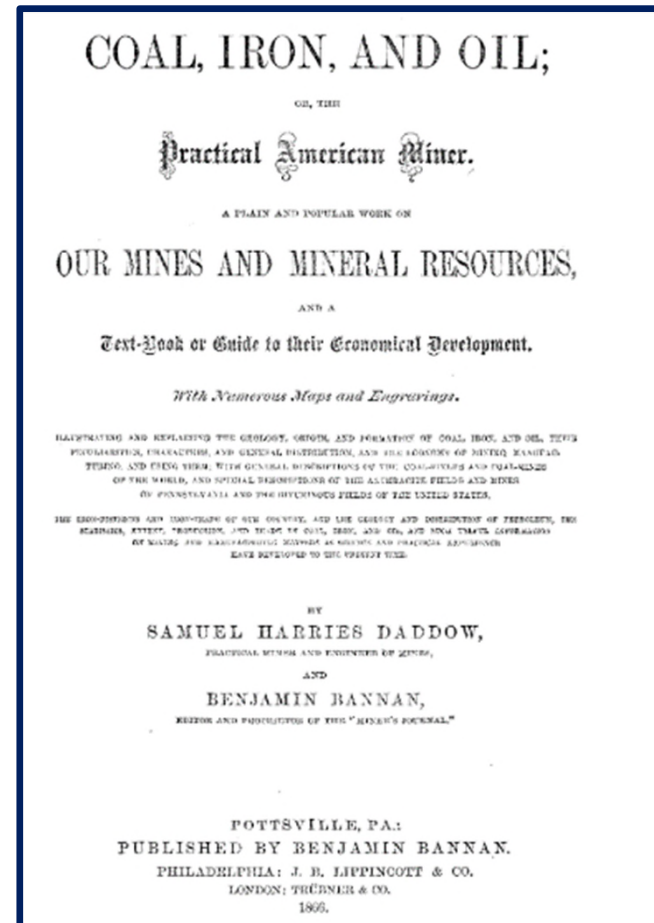


Membership
1871 - 1888



Mining Engineer “*Definition*”

...(the words “Mining Engineer” in these rules comprehend Engineers connected with either Mining or Metallurgy)...



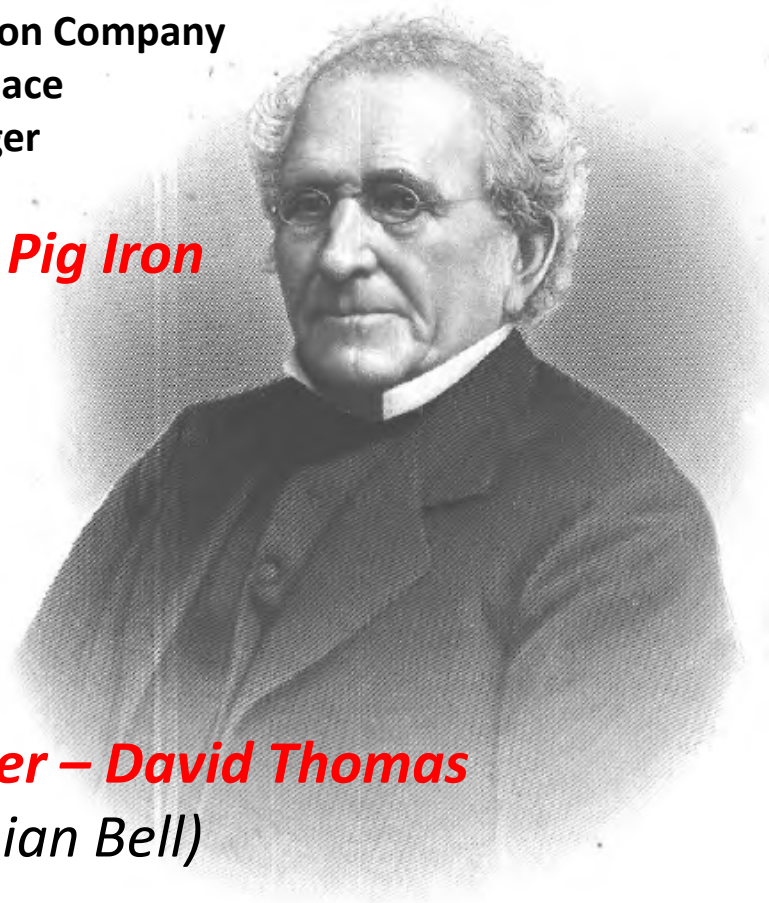
Darrow
1866

First President - *TMS/AIST Relevance*



1838 From Wales
Lehigh Crane Iron Company
Erect blast furnace
Furnace manager

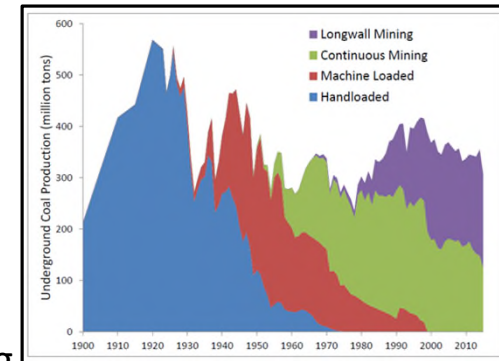
Anthracite Pig Iron



First President and Honorary Member – David Thomas
(Second Honorary Member - Sir Lothian Bell)

Return to Wilkes-Barre – Where it all started.

- 1871 Founding
 - First technical paper: “Geographical Distribution of Mining Districts”
- 1877 (20th meeting); visit Gen. Paul Oliver’s gunpowder facility
 - Membership 699 – 5 honorary, 50 foreign, 644 domestic
- 1887 (47th meeting) Scranton w/ Wilkes Barre excursion
- 1891 (60th meeting) Glenn Summit
 - "camp-fire" reception given by General Paul Oliver
- 1911 (100th meeting)
- 1921 (124th meeting) Semi-Centennial
 - Wyoming Shovel Works, Wyoming, PA
- 1931 (n/a 1927-35 numbers not assigned) 60th Anniversary Celebration - Iren Temple
 - 40 automobiles used to visit mines



1921 Semi-Centennial

with thanks to the Anthracite Coal Heritage Alliance
Facebook page



AUDENRIED BREAKER
Lehigh & Wilkes-Barre Coal Company Operation



SPRING MOUNTAIN COLLIERY
Lehigh Valley Coal Company Colliery is Noted For Its Huge Caim Pile, 100 feet High, Which is a Landmark Visible for Miles. It is Interesting to Note the Long Steam Lines, Which Are Gradually Being Displaced by Electricity.



NO. 1 EASTERN EXTENSION STRIPPING
The Audenried Colliery of the Lehigh & Wilkes-Barre Coal Company. The Stripping When Finished Will Isolate a Mine Fire in Part of the Colliery.



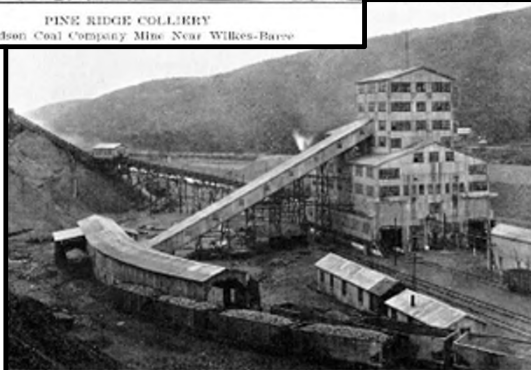
PROSPECT BREAKER
The Long Conveyor Line Leading to the Top of This Breaker of the Lehigh Valley Coal Company is Similar to the Ones Now Superceding the Old Horizontal Inclines.



OLD STRIPPING
Cranberry Creek Colliery of the Cranberry Creek Coal Company. Inasmuch as the Coal Removed Was Piled to the Right in the Stripping and Then the Mine and Loaded into Mine Cars and Prepared.



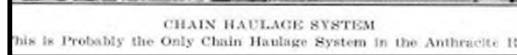
PINE RIDGE COLLIERY
A Hudson Coal Company Mine Near Wilkes-Barre



HAUTO WASHERY
Operated by the Lehigh Coal & Navigation Company



WASHERY AND BREAKER
Jeddo No. 4 Colliery of the G. B. Markle Company



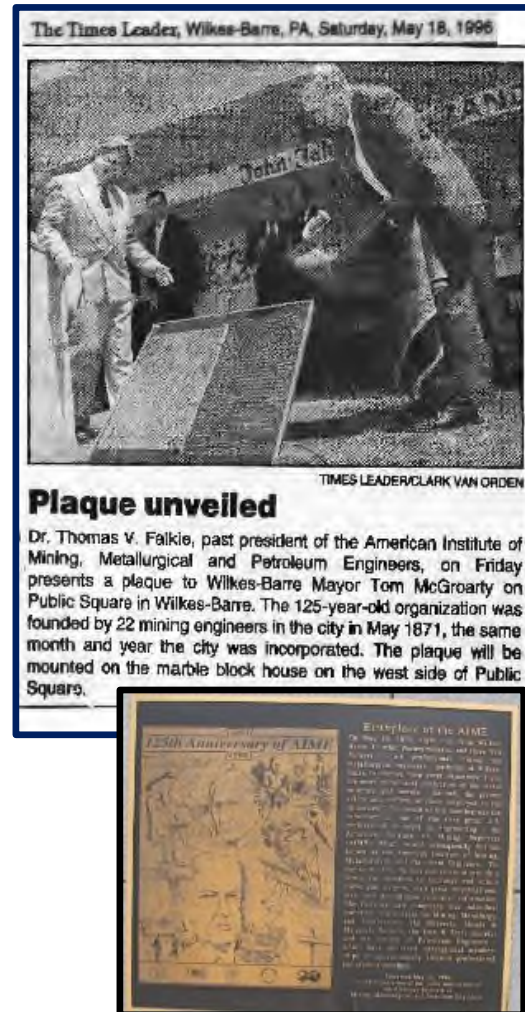
CHAIN HAULAGE SYSTEM
This is Probably the Only Chain Haulage System in the Anthracite Field

Return to Wilkes-Barre – Where it all started.

1971 - 100th



1996 - 125th



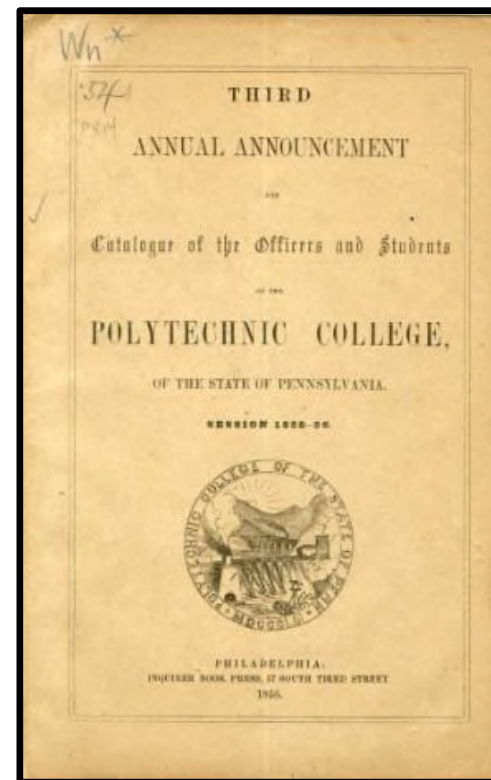
2016 - 145th



The Start of Mining Engineering Education in the US 1857 Polytechnic College of the State of Pennsylvania



(Petroleum Engineering: University of Pittsburgh 1910)



Mineral Industry Education

1893 Stats Shown



Date.	SCHOOL.	No. Grads. to 1892.	Average per year.
1867	Columbia School of Mines	402	15.46
1867	Michigan University	41	1.57
1868	Massachusetts Institute of Technology	126	5.04
1869	Washington and Lee (none since 1875)	8	0.03
1871	Lehigh University	48	2.28
1871	Lafayette College	40	1.71
1874	Missouri University	26	1.31
1874	Washington University, St. Louis	43	2.26
1877	California University	55	3.44
1878	Illinois University	6	0.40
1879	Wisconsin University	12	0.92
1882	Colorado School of Mines	26	2.60
1888	Michigan Mining School, Houghton	27	5.40
1890	Alabama Polytechnic	4	1.33
1891	Montana School of Mines	6	3.00
1892	Pennsylvania University	1	1.00
Total in 26 years		871	31.05



**The Man with a Future
is the TRAINED Man**

The man who soon will be in a better position than he occupies today is the man who is devoting some of his spare time to vocational study NOW. He knows that training is the best means of strengthening his salary-earning ability.

From spare-time study ambitious men everywhere have risen to positions of responsibility. They developed their natural faculties, and so progressed in an era of constantly increasing competition. Tens of thousands of such men are doing so today. *They are the men with a future.*

Your future rests with yourself. If you are planning a career or are dissatisfied with your present position and prospects, the International Correspondence Schools can help you. We place OUR 48 YEARS' EXPERIENCE at your disposal. Let us give you our expert advice, and tell you what we can do for you—free and without obligation. That may prove to be of lifelong benefit to you. DON'T DELAY.

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(These booklets include details of courses for various Examinations.)

INTERNATIONAL CORRESPONDENCE SCHOOLS LTD.
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Role of Professional Societies



From AIME's Founding May 16, 1871 (150 years ago)

The objects of the American Institute of Mining Engineers are to enable its members....to meet together at fixed periods for the purpose of reading papers upon and discussing subjects which have for their aim –

- ***the economical production of useful minerals and metals, and***
- ***the safety and welfare of those employed in these industries.....***



H&S Priority

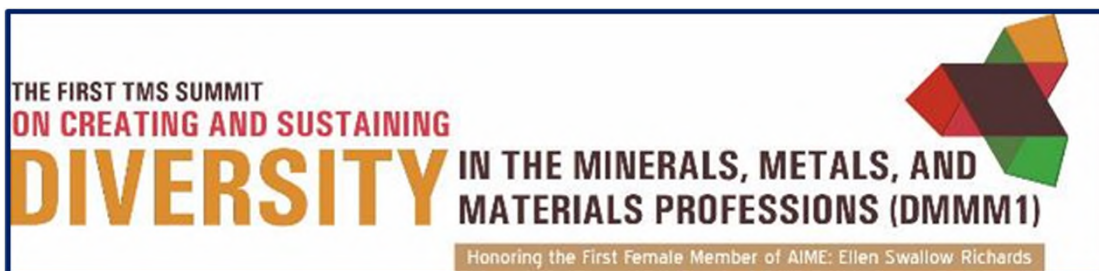
Of the first five papers given during that meeting in Wilkes-Barre, two were on mine ventilation

The Richards Family

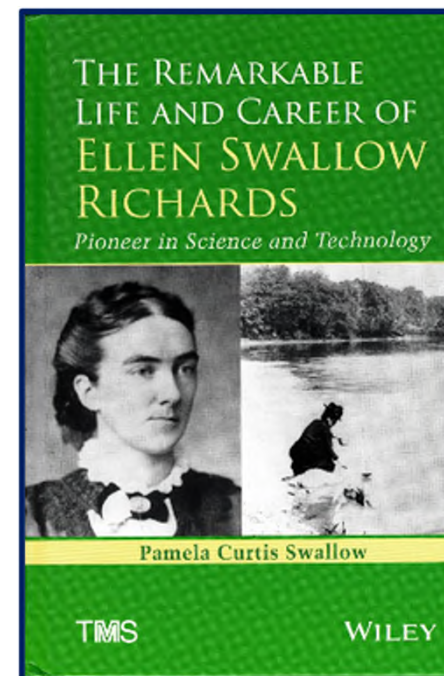
ESR – 1879 Montreal Meeting - 1st Woman Member of AIME



- **Ellen Henrietta Swallow Richards 1842 – 1911**
 - Foremost female industrial and environmental chemist in the United States in the 19th century, pioneering the field of home economics. Richards graduated from Westford Academy (2nd oldest secondary school in Massachusetts) and attended Vassar. She was the first woman admitted to the Massachusetts Institute of Technology (1870) and its first female instructor, the first woman in America accepted to any school of science and technology, and the first American woman to earn a degree in chemistry.
- **Robert H. Richards 1844 – 1945**
 - 7th student to enroll at MIT; member of first graduating class in 1868
 - Professor of Mining Engineering at MIT from 1873 to 1914
 - Married Ellen Swallow 6/8/75



Note: At 1879 Pittsburgh meeting (before Montreal), AIME became the first technical society to let women sit on the banquet floor (per RWR)



Women in Mining



1894 2nd woman elected: Lena Allen Webster-Stoiber-Rood-Ellis, called “Captain Jack” or “Jack Pants”

1900 12th US Census

3 Women self-identified as Mining Engineers

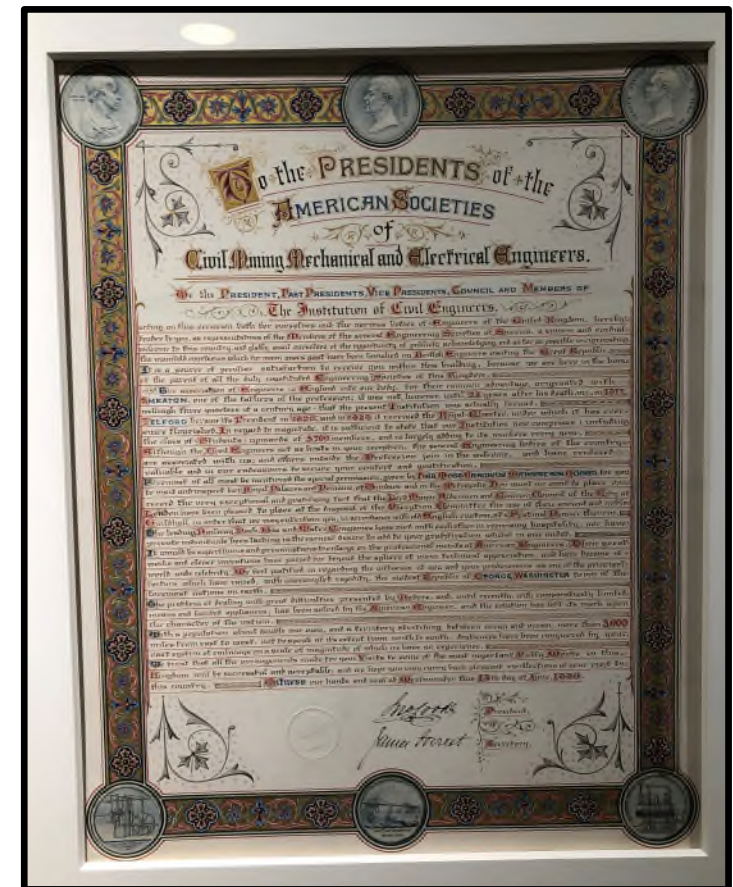
11 Surveyors

248 Chemists, Assayers, and Metallurgists

1911 Mrs. F.B. Flower enrolled at Columbia (44 years after program started)

Wilkes-Barre started a long tradition of field trips...

- 1873 – Boston tunnel construction
- 1880 Lake Superior – from Chicago 11 days
 - Travel by train, carriage, steamer
- 1882 Colorado 10 days
- 1885 Halifax 8 days
- 1887 SLC, Butte – from Chicago 23 days
- 1889 Great Britain/Europe – 2 months
- 1889 Colorado 10 days
- 1890 NYC/Pittsburgh Joint with ISI GB 30 days
- 1895 Florida 15 days
- And the list goes on



1899 – 77th Meeting California



9/15 Train trip started in NYC
9/16 Chicago, IL
9/17 St. Paul, MN
9/18 Butte, MT
9/20 Anaconda, MT
9/21 Spokane, WA
9/22 Portland, OR by steamer
9/23 Keswick & Redding, CA

10/14 Bisbee, AZ
10/24 Chicago, IL

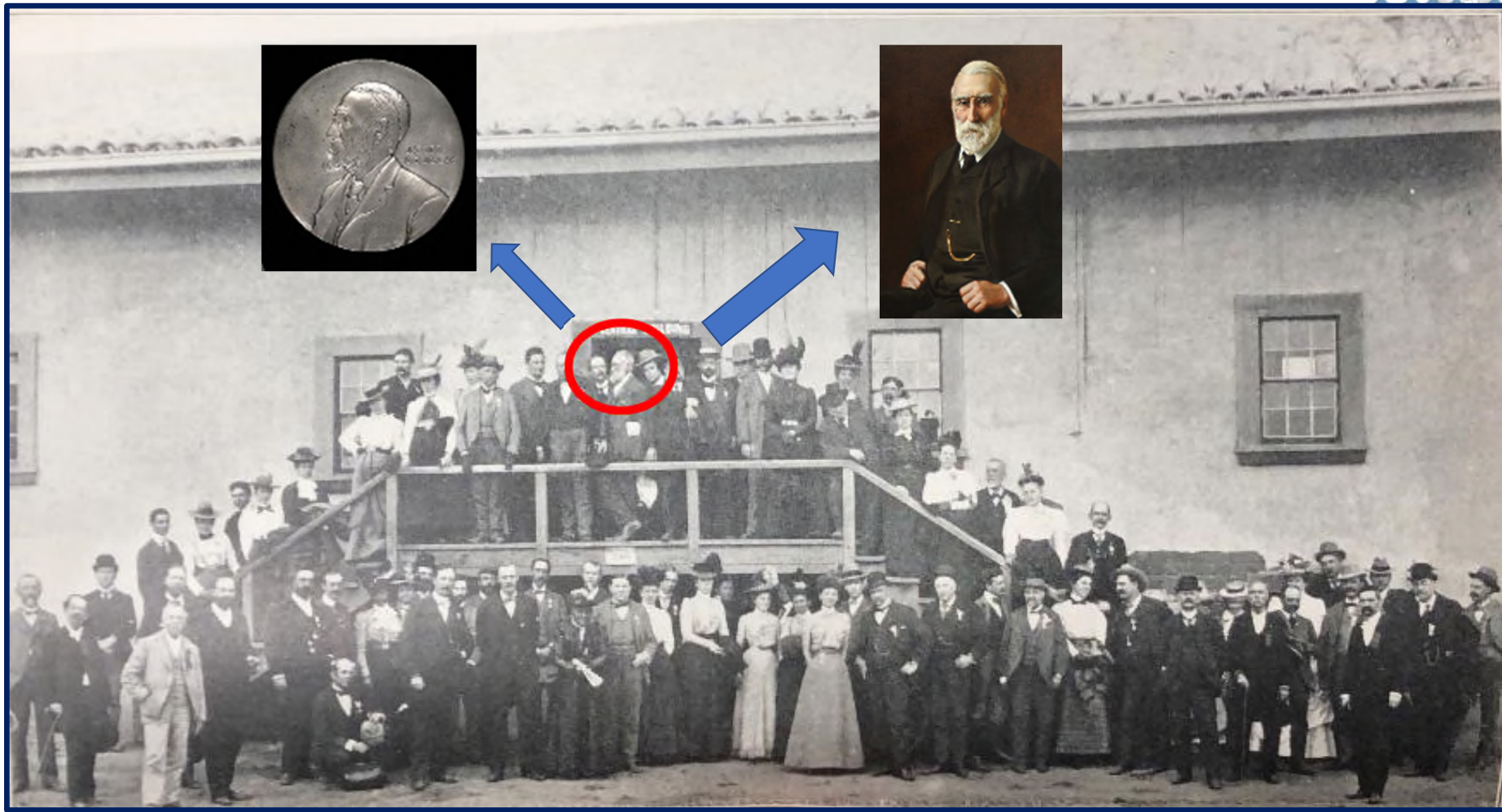
Registered attendance 116
members plus spouses

Almost 10,000 miles of railway travel
Side trips to Yosemite and the Grand Canyon
Meals, sleeping accommodations
\$235.84 - \$5,581.64 in 2020 dollars

Dr. Rossiter Worthington Raymond (1840-1918)



Dr. James Douglas (1837-1918)



October 14, 1899 Bisbee, AZ
Copper Queen Mine
Dr. James Douglas - host

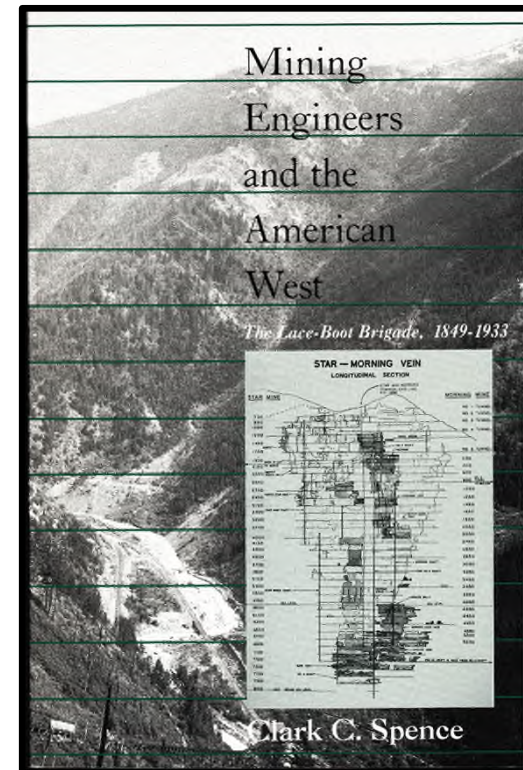
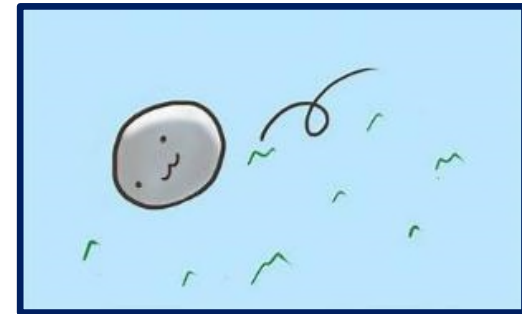


.”.... a luncheon served in one of the great stopes of the Copper Queen mine, at which the guests arrived by first descending 400 feet in cages through the shaft, and then walking nearly half a mile through galleries illuminated with countless candles, reinforcing the electric lights. In the stope, tables had been set; and the luncheon was served, with miners as attendants, from tin dishes, cups and coffee-pots, such as the miners use - only brand-new for the occasion. The ordinary ladders had been replaced with convenient staircases, so that, after the luncheon, even the ladies could easily climb to higher levels, and inspect “in place” the ore of the mine. The visitors were also conducted to a stope in which mining work was actually going on.”

Concluded with a banquet at the Masonic Hall of Bisbee

Early member snapshot

- 1903 AIME Membership of 3,300
- 2,250 Changes of address made in prior 12 months - most confined to about 20% of younger group
- “there are about 600 men who are as nomadic as the Kirghiz of the steppes”



May 6, 1906 Engineering Societies Building

29 West 39th St., NYC



AIME	1871
ASME	1880
IEEE (AIEE)	1884
ASCE	1852 (1916)
AIChE	1908 (1958)

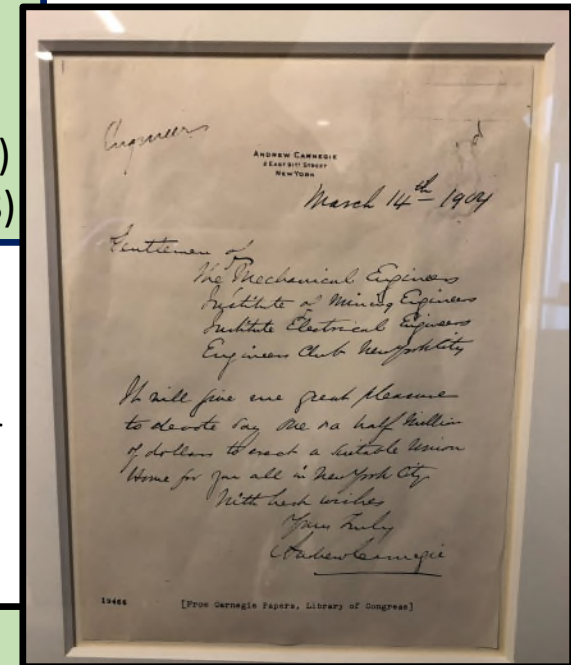
John Fritz HM; AIME Pes. 1894
Andrew Carnegie; HM 1905
Rossiter Raymond; HM 1911



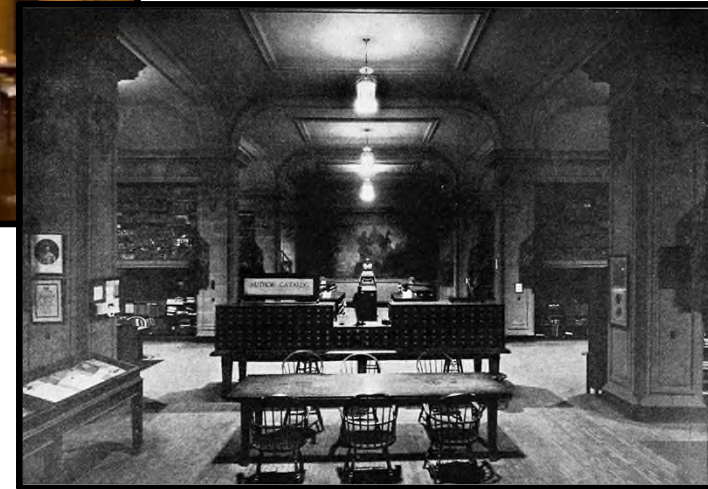
UEC 345 E. 47th St. 9/5/1961 – 1998

(Now Site of 72-Story Trump World Tower)

Sold for \$52 million; \$9 million distribution through AIME



Thor Equities Commercial/Retail Property 29 West 39th St., NYC Today



Wm. Taft Letter 11/11/1910

Directed construction of Panama Canal as Roosevelt's Sec. of War

E. S. Perry Aug Wilhelm
November 11th 1910
To President of American Mining Engineers
From U.S.S. Tennessee
To Raymond Mining Engineers
Perry Aug 1910
Your message received. It is most satisfactory to have the assurance of men who are experts, that the great canal construction has been well planned and is being carried on to a successful completion. I thank you

U.S.S. Tennessee
American mining engineers returning from Isthmus, congratulate you upon good plans, splendid management and satisfactory condition of work
and your associates for your visit and the courtesy of your kind message
Signed Wm. H. Taft

August 15. 2014 Centennial

AIME Timeline

- 1871 Wilkes-Barre, PA
- 1911 First Local Sections
- 1914 PA Anthracite Section (10th)
- 1917 WAAIME
- 1918 Institute of Metals Div.
- 1922 Petroleum Division
- 1928 Iron and Steel Division
- 1937 Divisions to Societies
- 12/1/1974 ISS Formed
- 1984 Societies - 301(c)3s
- 2003 office from NY to CO
- 2004 ISS-AISE merger - AIST

“This body was a dignified aggregation of metallurgists which had been in existence for about 11 years.”



Name Change

- 1919: American Institute of Mining and Metallurgical Engineers
 - Originally proposed in 1876 – 43 years earlier
 - Also considered: American Institute of Mining, Metallurgical, and Geological Engineers
- 1956: American Institute of Mining, Metallurgical, and Petroleum Engineers

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Petroleum

SPE Relevance



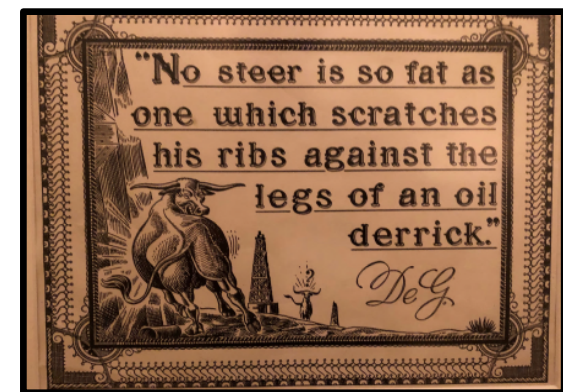
- **First petroleum paper 1879** (Trans. V 7, P 316, Feb. 1879)

THE BRADFORD OIL DISTRICT OF PENNSYLVANIA.

BY CHAS. A. ASHBURNER, ASSISTANT, SECOND GEOLOGICAL SURVEY
OF PENNSYLVANIA, PHILADELPHIA.



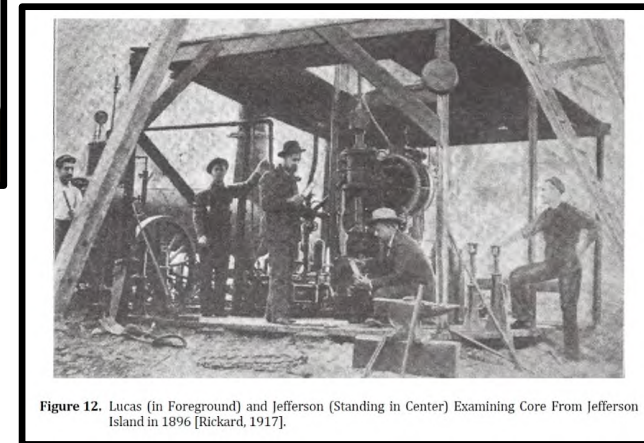
- **1910 First Courses**
 - Univ. of Pittsburgh
 - Univ. of California Berkeley
- **1913 AIME Technical Committee**
- **1915 First Degree: Univ. of Pittsburgh**
 - UC Berkeley established 4-year program



Petroleum

SPE Relevance

- 1913 Standing Tech. Committee
- First Chair: Anthony Francis Lucas
 - Gold and rock salt prospector
 - Salt deposits/sulfur/oil relationship
 - 1901 Lucas Spindletop Gusher
 - Considered the founder of modern petroleum reservoir engineering
- 1922 Professional Division
 - 900 members



AIME Timeline

- 1871 Wilkes-Barre, PA
- 1918 Institute of Metals Div.
- 1922 Petroleum Division
- 1928 Iron and Steel Division
- 1930 Coal Division
- 1932 MI Education Division
- 1935 Industrial Minerals Division
- 1947 Ore Treatment Division
- 1957 Divisions to Societies



1928
Univ. of Louvain
Carillon



1920 Waldorf Astoria in NY
Herbert Hoover, AIME President

AIME Timeline

- 1957 Divisions to Societies
- 12/1/1974 ISS formed from TMS
- 1984 Societies incorporated
- 1996 125th Anniversary celebration
- 2003 office from NY to CO
- 2004 ISS-AISE (1907) merger to form AIST
- 2007 – SME, SPE, TMS 50th Anniversary celebration







Celebrate 50 years

The Society for Mining, Metallurgy, and Exploration, Inc.
 ~ Celebrates 50 years ~
 as a
 Member Society of AIME
 1957-2007

SME will mark its 50-year Anniversary with a Gala Dinner Celebration
 Sunday, February 15, 2007
 7:00 PM
 Hyatt Regency Hotel - Denver, Colorado

This special event will be held in conjunction with the 2007 SME Annual Meeting & Exhibit.
 The SME Foundation will host this historic event.

This formal dinner will include:
 A Four-course Meal ~ Commemorative Champagne Glasses ~ Collectible Memento
 Live Band ~ Recollection display from 50 years of serving the minerals industry

SPONSORSHIP OPPORTUNITIES are available for this unique event. For more information contact:
 SME Meetings Dept., meetings@aimeet.org, 800-763-3132, 303-973-9550.

AIME ≈ 200,000 Members



AIME Member Societies

- **SME - Society for Mining, Metallurgy, and Exploration**
- **TMS - The Minerals, Metals, and Materials Society**
- **AIST - Association for Iron and Steel Technology**
- **SPE - Society of Petroleum Engineers**



United Engineering Foundation (UES 1904; EF 1929; UET 1931; UEF 1998)

- | | |
|---|------|
| • AIME – Am. Inst. of Mining, Metallurgical and Petroleum Engineers | 1871 |
| • ASME – American Society of Mechanical Engineers | 1880 |
| • IEEE – Institute of Electrical and Electronics Engineers (AIEE) | 1884 |
| • ASCE – American Society of Civil Engineers (1916) | 1852 |
| • AIChE – American Institute of Chemical Engineers (1958) | 1908 |



AIME Previous Motto



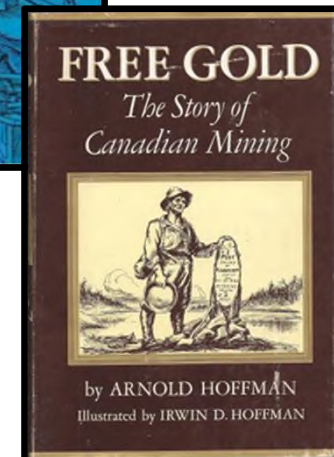
“AIME seeks to further the arts and sciences employed to recover the earth’s minerals and convert them to useful products. Minerals are the sources of the materials man has used to build his world. They are the basis of civilization and essential to the continuance of life as we know it.”

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AS WE KNOW IT.”

AIME Adapts: AIME's Current Vision and Mission

- **AIME's Vision** is to honor our legacy as a valued partner with our Member Societies.
- **AIME's Mission** is to support its Member Societies. We fulfill this mission by:
 - Exercising **fiscal responsibility**
 - **Distributing funds**
 - ~~Facilitating interaction~~ with the relevant scientific and engineering community
 - Honoring the **legacy and traditions** of AIME.

18 Award; 3 Scholarship; 12 Named Endowments Honoring AIME's Legacy



What We Do

- Forum for MS engagement
- Oral Histories
 - 28 SME out of 52
- Awards
 - 10 SME out of 18
- Scholarships
 - Young, DeWitt & Marshall
- Milestone Recognitions
- Funding
- Collaborative Efforts
 - UEF; OTC; ETHW



Order of the Dead Mackerel
(Scombus Mortuus)
Revived 2011 (140th Anniversary)



145th Annual Meeting
THUMS Long Beach

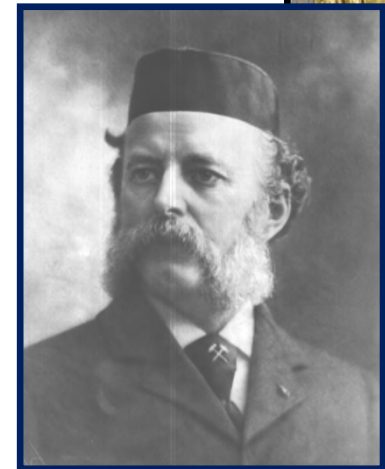
Role of Professional Societies



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- ***the economical production of useful minerals and metals, and***
- ***the safety and welfare of those employed in these industries.....***



Rossiter W. Raymond – our guide from 1871 though 1911: sailor, soldier, engineer, lawyer, orator, editor, novelist, story-teller, poet, biblical critic, theologian, teacher, chess-player

Role of Professional Societies



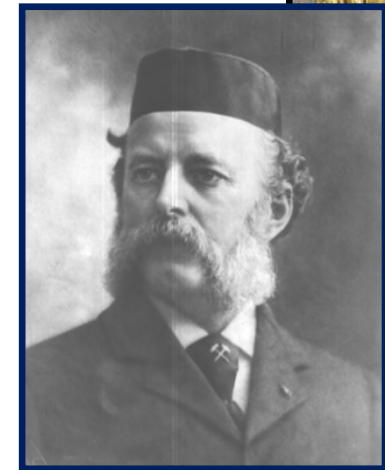
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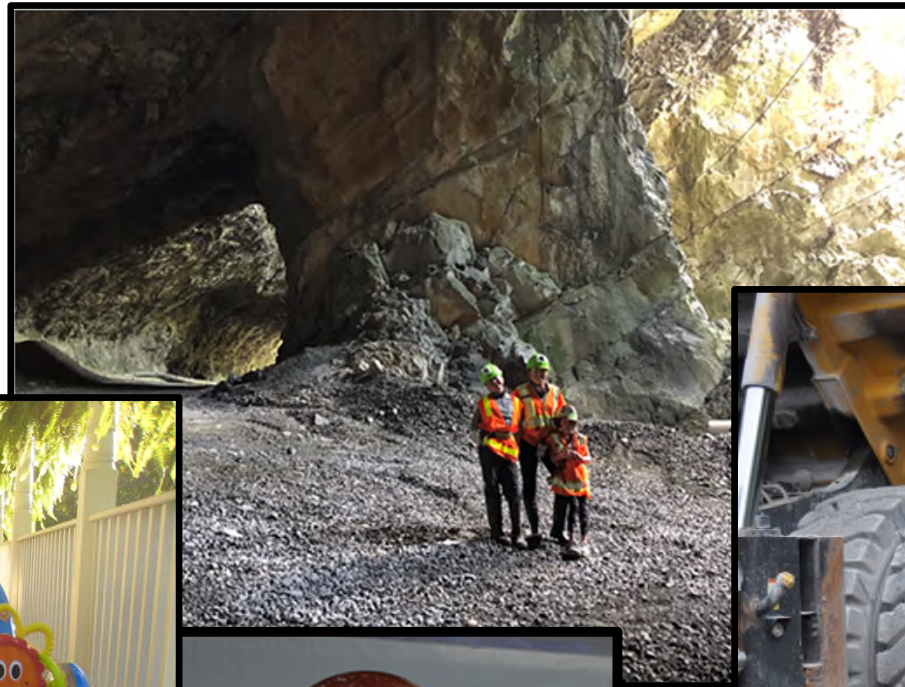
From SME's establishment in 1957 (64 years ago)

- **Advancing technical development, production, processing, application, health & safety;**
- **Dissemination of Knowledge;**
- **Networking and Relationships;**
- **Personal Growth;**
- **Lifetime Learning.**

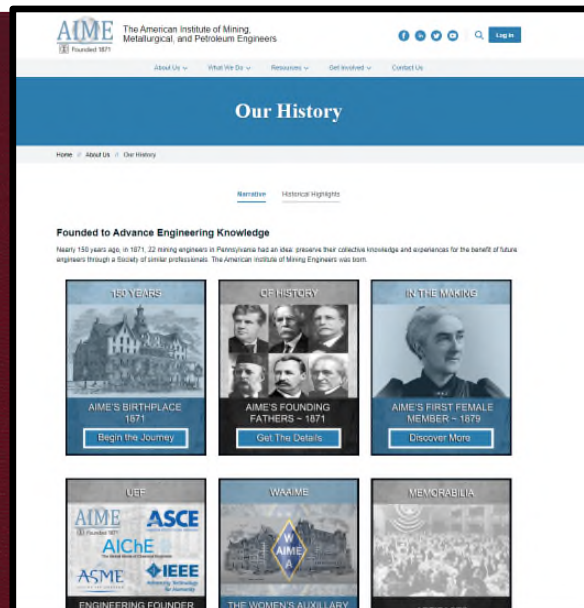
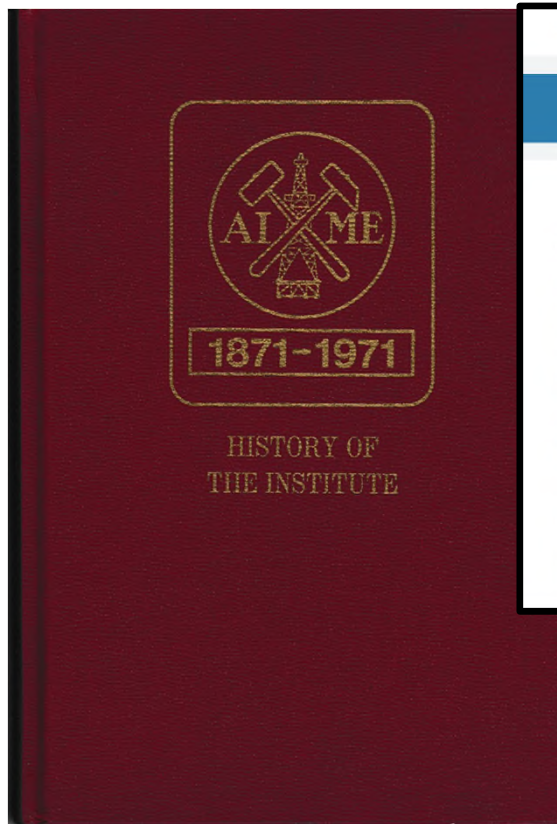


Rossiter W. Raymond – our guide from 1871 though 1911: sailor, soldier, engineer, lawyer, orator, editor, novelist, story-teller, poet, biblical critic, theologian, teacher, chess-player

SME will serve its future generations of members!



Interested in learning more about AIME??



www.aimehq.org

