From the Early Days to the Future for AIME and SME

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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
Attested copy – 1871 Meeting Announcement

Founding of AIME May 16, 1871
23 Mining Engineers
Thomas McNair’s account of the first meeting

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.'"
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

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68
7 Presidents
2 MHOE

Membership 1871 - 1888
Mining Engineer “Definition”

...(the words “Mining Engineer” in these rules comprehend Engineers connected with either Mining or Metallurgy)...
First President - *TMS/AIST Relevance*

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

**Anthracite Pig Iron**

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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
Return to Wilkes-Barre – Where it all started.

1971 - 100th

1996 - 125th

Plaque unveiled

Dr. Thomas V. Folio, past president of the American Institute of Mining, Metallurgical and Petroleum Engineers, on Friday presents a plaque to Wilkes-Barre Mayor Tom McGarvey on Public Square in Wilkes-Barre. The 125-year-old organization was founded by 22 mining engineers in the city in May 1871, the same month and year the city was incorporated. The plaque will be mounted on the memorial clock house on the west side of Public Square.

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

<table>
<thead>
<tr>
<th>Date</th>
<th>School</th>
<th>No. Grads. to 1893</th>
<th>Average per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1867</td>
<td>Columbia School of Mines</td>
<td>402</td>
<td>15.46</td>
</tr>
<tr>
<td>1867</td>
<td>Michigan University</td>
<td>41</td>
<td>1.57</td>
</tr>
<tr>
<td>1868</td>
<td>Massachusetts Institute of Technology</td>
<td>126</td>
<td>5.04</td>
</tr>
<tr>
<td>1869</td>
<td>Washington and Lee (none since 1875)</td>
<td>8</td>
<td>0.03</td>
</tr>
<tr>
<td>1871</td>
<td>Lehigh University</td>
<td>48</td>
<td>2.28</td>
</tr>
<tr>
<td>1871</td>
<td>Lafayette College</td>
<td>40</td>
<td>1.71</td>
</tr>
<tr>
<td>1874</td>
<td>Missouri University</td>
<td>26</td>
<td>1.31</td>
</tr>
<tr>
<td>1874</td>
<td>Washington University, St. Louis</td>
<td>43</td>
<td>3.36</td>
</tr>
<tr>
<td>1877</td>
<td>California University</td>
<td>55</td>
<td>3.44</td>
</tr>
<tr>
<td>1878</td>
<td>Illinois University</td>
<td>6</td>
<td>0.40</td>
</tr>
<tr>
<td>1879</td>
<td>Wisconsin University</td>
<td>12</td>
<td>0.92</td>
</tr>
<tr>
<td>1882</td>
<td>Colorado School of Mines</td>
<td>26</td>
<td>2.60</td>
</tr>
<tr>
<td>1888</td>
<td>Michigan Mining School, Houghton</td>
<td>27</td>
<td>5.40</td>
</tr>
<tr>
<td>1890</td>
<td>Alabama Polytechnic</td>
<td>4</td>
<td>1.33</td>
</tr>
<tr>
<td>1891</td>
<td>Montana School of Mines</td>
<td>6</td>
<td>3.00</td>
</tr>
<tr>
<td>1892</td>
<td>Pennsylvania University</td>
<td>1</td>
<td>1.00</td>
</tr>
<tr>
<td>Total in 26 years</td>
<td></td>
<td>571</td>
<td>33.05</td>
</tr>
</tbody>
</table>

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

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[Ad Image]
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

<table>
<thead>
<tr>
<th>Society</th>
<th>Founded</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIME</td>
<td>1871</td>
</tr>
<tr>
<td>ASME</td>
<td>1880</td>
</tr>
<tr>
<td>IEEE (AIEE)</td>
<td>1884</td>
</tr>
<tr>
<td>ASCE</td>
<td>1852 (1916)</td>
</tr>
<tr>
<td>AIChE</td>
<td>1908 (1958)</td>
</tr>
</tbody>
</table>

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

(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

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 - 501(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
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
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.”
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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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
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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