

SCIENTECH CLUB NEWSLETTER



*The 99th year as a forum for the exchange of information in scientific and technical fields
A club for people who never stop learning*

Meeting at 12 noon on Mondays at Northside K of C, 2100 E. 71st St., Indianapolis, IN
In an emergency, call 317-253-3471
Luncheon (\$12) @ 11:15 am, Coffee/tea (\$2) Reservations not needed

2017

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June 19

<http://www.scientechclub.org>

Bonnie Carter, President
John Rathman, Secretary

Jeff Rasley, VP
John Prentice, Treasurer

June

Join us for a holiday picnic lunch and patriotic music

26

Program: History: Yours and Ours

Speaker: Jacqueline Nytes, CEO, Indianapolis Public Library

July

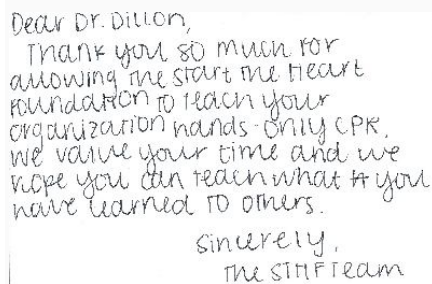
3 **Independence Day weekend, no meeting**

Did you know? During the American Revolution, the legal separation of the Thirteen Colonies from Great Britain in 1776 actually occurred on July 2, when the Second Continental Congress voted to approve a resolution of independence that had been proposed in June by Richard Henry Lee of Virginia declaring the United States independent from Great Britain rule. After voting for independence, Congress turned its attention to the Declaration of Independence, a statement explaining this decision, which had been prepared by a Committee of Five, with Thomas Jefferson as its principal author. Congress debated and revised the wording of the Declaration, finally approving it two days later on July 4. A day earlier, John Adams had written to his wife Abigail:

“The second day of July, 1776, will be the most memorable epoch in the history of America. I am apt to believe that it will be celebrated by succeeding generations as the great anniversary festival. It ought to be commemorated as the day of deliverance, by solemn acts of devotion to God Almighty. It ought to be solemnized with pomp and parade, with shows, games, sports, guns, bells. “

- 10 **Program:** Fly-Over States Origins, 1783-1848
Speaker: Roger Robison, MD, Club member
- 11 **Board of Directors:** 6:30 pm, Northside K of C
- 17 **Program:** Discovering Humans
Speaker: John Langdon, Professor of Biology and Anthropology, University of Indianapolis
- 24 **Program:** An Overview of the Nobel Prizes in Chemistry, Physics & Medicine
Speakers: Dick Carter, Alan Schmidt, Tom Lauer, Club members

See more at: <http://www.scientechclub.org/programs/calendarpagecss.asp>



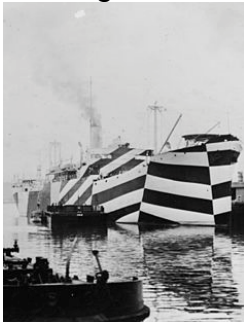
Dear Dr. Dillon,
Thank you so much for
allowing the Start the Heart
Foundation to reach your
organization hands-Only CPR.
We value your time and we
hope you can teach what ~~to~~ you
have learned to others.
Sincerely,
The SHHF Team

Note received from the Hands Only CPR/Start the Heart
Foundation staff for June 12 program

Centennial Homework

What were “dazzle” patterns used for in 1918?

Answer: They were paint patterns on ocean liners used for protection at sea to confuse enemy submarines from a distance. Dazzle camouflage, also known as razzle dazzle (US) or dazzle painting, was a family of ship camouflage used extensively in World War I, and to a lesser extent in World War II and afterwards. Credited to the British marine artist Norman Wilkinson, though with a rejected prior claim by the zoologist John Graham Kerr, it consisted of complex patterns of geometric shapes in contrasting colors, interrupting and intersecting each other.



More at https://en.wikipedia.org/wiki/Dazzle_camouflage

Hikers Crossed that Bridge

Inspired by the February 20th, 2017 talk about the rescue and restoration of some historic Indiana bridges in a new location over the White River at the Hamilton County Strawtown-Koteewi Park, the Sciencetech hiking group led by David Culp decided to take a look at the bridges and explore the trails in the park, about which Bill Stanley had said good things.

The first attempt fell in the water (apt for bridges) because a phone call on our hiking date revealed that, while the Nature Center would be open on that day, all the paths were under water from the extraordinary rains of spring. Finally, a dry, sunny day presented itself for the outing - a toasty 93 degrees! Nevertheless, a group of intrepid hikers, each dressed as they thought fit for the excursion, gathered for the jaunt to the bridges and the park. We talked with the attendant at the Nature Center about the recent "return" of excavated artifacts to the Miami of Oklahoma, leaving the Miami Indians of Indiana, who had been consulted on the archeological digs, with nothing. The paths were well trodden and we kept to the wooded areas, avoiding the blazing sun and dust of the "prairie" spaces. No one suffered from heat stroke, nor did anyone feel the need to enter the water at the canoe landing to cool off. The hiking group may revisit the park during another season and walk the prairie areas we eschewed on this trip. Submitted by Alison Brown



Pictured: Bill Stanley, Alan Schmidt, Jeff (Adonis) Rasely, Alison Brown, Dave Culp and Kent Sharp

Today's Presentation

Program: Bridge Accidents and Repair

Speaker: Michael Wenning, PE

Introduced by: Vic Wenning

Attendance: 86

Guests: Donna Holl, Melanie Harmon, Salim Najjar

Scribe: John Peer

Editor: Bonnie Carter

Today's presenter was Michael Wenning, PE, son of Club member Victor Wenning. Mike graduated from Purdue in 1981 in Civil Engineering. He also served in the Coast Guard. Currently he is Director of Transportation Services for the Midwest for GAI Consultants and is the "on call" PE for bridges for the Indiana Department of Transportation. Mike has 36 years of bridge experience including 300+ new bridges and 425+ bridge rehabilitation projects. Co-presenter, Jeremy Hunter, PE, with INDOT, was not able to make it today.

There are 614,400 bridges in the US, of which 9.1% are structurally deficient in some way. This equates to one bridge every 6.7 miles. On average, 1 in 4700 bridges collapses each year,

giving you the likelihood of driving over a bridge about to collapse about once every three years (driving 12K mi/yr).

Bridges are designed for both “Dead Loads” (its own static structure) and “Live Loads” (trucks, cars, and special vehicles). Design Loads include water and ice flows, temperature extremes (thermal expansion of up to a foot in long spans) and high winds including hurricanes. Design philosophy includes safety, durability (was 50 years, now 75 years) and economy. Bridges are designed for 100-year floods, legal truck loads and legal truck sizes (14' 6", but often 16+ ft).

Causes of bridge damage include earthquakes, floods, fire, poor maintenance, impact (collisions) and construction problems. Over 500 bridge failures occurred from 1989 – 2000, with bridge ages varying from <1 per year to 157 years of service (52.5 years on average). Fifty three percent were caused by flood and scour (erosion of river bed by turbulent water). Twenty percent were caused by overload and lateral impact.

The Schoharie Creek bridge (NY State Thruway) collapsed in 1987 due to scour.

The I-35 bridge over the Mississippi River in St. Paul, MN collapsed due to “Dead Load” overload. The trusses were under-designed, but were still within the normal safety factor. However, construction material was stored on the bridge and overloaded the trusses.

In Pennsylvania in 2005, pre-stressed concrete box beams, commonly used for interstate overpasses, failed when the steel strengthening cables rusted from water trapped between the beams (where the damage could not be seen).

The Hoan Memorial Bridge in Milwaukee failed in 2000 due to stress and extreme temperature.

In 2006 in Hays, Kansas an I-70 overpass was essentially bisected by the boom of a backhoe that was in a raised position.

Similarly, in 2017 in Indianapolis, the Rockville Rd. overpass on I-465 was heavily damaged when a mobile car crusher towed on a flatbed was inadvertently in a raised position and slammed into the bridge. The debris was cleared in 48 hours so I-465 could reopen, but it took months for the east-bound lanes of the overpass to be rebuilt. Even that was a fast-paced schedule due to use of special contracting procedures used by INDOT with federal approval.

In Webber Falls, OK in 2002, a barge collided with the bridge collapsing two sections. An alert truck driver stopped in time and blocked the road.

In 2012 in Benton, KY, a river freighter took out a truss bridge and wrapped it around the bow. There was minimal damage to the freighter, but the bridge was totally wiped out. Mike commented that truss designs are very strong in the main direction, but very weak for lateral collisions.

Finally, not all bridges collapse. There is a railroad trestle in Durham, NC, with a clearance of 11' 8". So many vehicles have hit the bridge without damaging it that a local video camera was set up to capture the incidents. These are visible at the website 11foot8.com. Many collisions occur despite ample warning beforehand. Enjoy.

Thanks to Mike for an informative and entertaining talk.



Mike Wenning & Vic Wenning