



THE ENGINEAIRE

MONTHLY NEWSLETTER

APRIL 9, 2023



GOVERNMENT RELATIONS

The AR ASHRAE chapter was able to work with the Arkansas Governor and Secretary of State to declare Feb. 19–25 National Engineers week for the state.

Some of the AR ASHRAE chapter met at the State Capitol after the official signing of the proclamation.



**NEXT MEETING :
APRIL 5, 2023**

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- YEA
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- WOMEN IN ASHRAE
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- ASHRAE HISTORY

In the pictures: Owen Stuckey, Cruz Elick, India Beavers, Mykala Sinclair, Josh Faulkner, Anna Rogers, Steve McConnell, Blake Beckham, and AR Secretary of State John Thurston.



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YEA

Our YEA committee is hosting some great events coming up. If you are interested in attending an event or sponsoring one please reach out to Blake Beckham at blake.beckham@victaulic.com

- YEA Crawfish Boil April 14th
- YEA WWE Monday Night Raw April 17th



EVENTS

- YEA Crawfish Boil-Friday, April 14th
- YEA WWE Monday Night Raw-Monday, April 17th
- Rock Town Tour and Tasting-Friday, May 5th
- Past President's Night-Thursday, May 11th at Dickey Stephens Park. Buffet dinner and bar in the Club Car Picnic Area. For more information reach out to Steve McConnell at smcconnell@hsaconsultants.com
- ASHRAE Cornhole Tournament-Friday, May 19th



WOMEN IN ASHRAE

Friday March 24, 2023 at Arkansas Foodbank



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HOT AIR

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PODCAST

Regulating Indoor Contaminants With Benjamin Jones

Benjamin Jones, Dr.Eng., speaks with Technical Editor Rebecca Matyasovski about a proposed addendum to Standard 62.2 that considers harm as a basis of regulating contaminants in homes. He also talks about how this type of addenda could be used in other indoor spaces and by other organizations—and why you should always turn on your range hood.



Spotify



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NEXT MEETING

May's Meeting will be at Arkansas Red and Blue and will be ASHRAE distinguished lecturer Dru Crawley, Ph.D, AIA, Fellow ASHRAE, BEMP. He will be discussing introduction to building decarbonization.

Meeting will be 4/5/23



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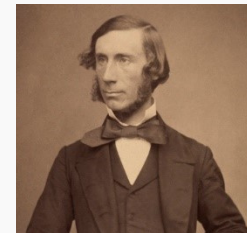
ASHRAE HISTORY

John Tyndall's Seminal Experiments

Russell Black, Arkansas ASHRAE Historian

In this era of the COVID-19 where face masks, HEPA filters, and Droplet Nuclei Theory are impacting our daily lives as never before, it may seem extraordinarily improbable to learn that all these epidemiologically significant factors can be traced to a single origin point of serendipitous discovery. Amazingly, face masks, HEPA filters, and Droplet Nuclei Theory can all be traced to experiments performed by British scientist John Tyndall and his subsequent lecture Dust and Disease given in January 1870 to the Royal Institution of Great Britain (London).

In a James Burke-like "Connections" sequence, Tyndall's experiments directly led to facemasks and respirators and thus indirectly to HEPA filters while his Germ Theory support, experimental technique, and especially his air-vector germ proofs led to a more tortuous but not less connected route to William Wells' Droplet Nuclei Theory.



Tyndall was performing an experiment regarding the decomposition of water vapor by light when he discovered that dirt particles in the air were complicating his experimental results. When Tyndall attempted to remove the dust particles from the air, he stumbled into a totally different and new field of scientific endeavor which ultimately led to face masks, HEPA filters, and Droplet Nuclei Theory.

Tyndall, referencing Joseph Lister's observation of fetid blood that had been left exposed stated: "... you find the putrefying substance (blood) swarming with organic life, the germs of which have been derived from the air." Dust and Disease, The British Medical Journal, June 24, 1871. With this one statement Tyndall launched the science-based theory of air-borne disease.

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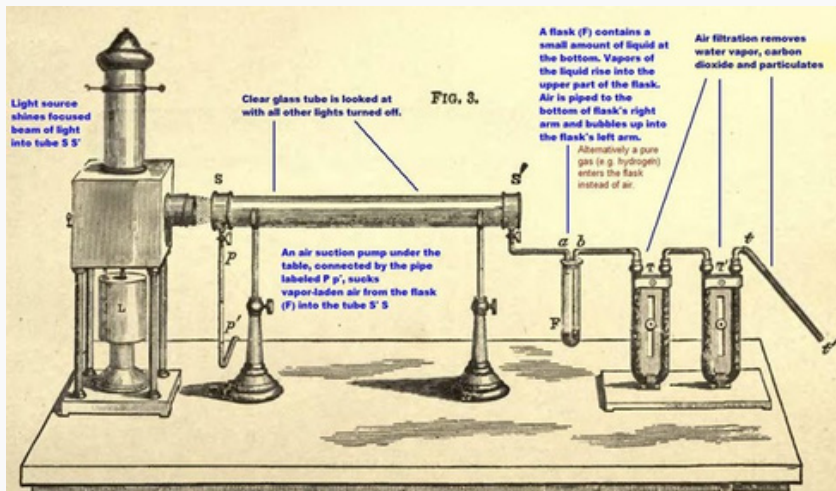
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But Tyndall was not through, his experiments not only produced rock-solid evidence to explain the cause and air vector of disease, Tyndall also produced a way to reduce the airborne spread of disease. Tyndall stated (again in *Dust and Disease*) regarding disease that: "Medicine as yet is powerless to arrest its progress and the great point to be aimed at is to prevent its access to the body. It was with this thought in my mind that I ventured to recommend, more than a year ago, the use of cotton-wool respirator in infectious places."



Tyndall then predicted: "If a physician wishes to hold back from the lungs of his patient, or from his own, the germs by which contagious disease is said to be propagated, he will employ a cotton wool respirator ... Such respirators must, I think, come into general use as defense against contagion." How right Tyndall was.

This step of creating respirators and face masks eventually led, many years later, to the technological foundation from which HEPA filtration grew. Culminating in the creation of the HEPA filter during the Manhattan Project of the 1940's.



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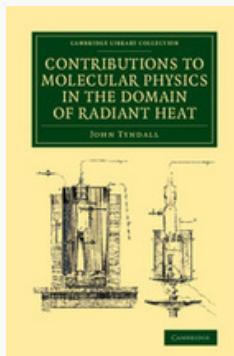
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Regarding Droplet Nuclei Theory, William Wells stated in his monumental work *On Air-Borne Infection*: “Tyndall’s classic experiments on atmospheric dust suggest a simple method for demonstrating the realness of droplet nuclei. To make use of this method, the author....” Here Wells clearly indicates that he utilized Tyndall’s experimental methodology to demonstrate the “realness” of droplet nuclei, an appreciative nod to the importance and application of Tyndall’s experiments.



So today, as we apply face mask and HEPA technology along with Droplet Nuclei Theory to our everyday life fighting the COVID-19 pandemic, we may wish to whisper a special thanks to the man, John Tyndall, whose fortuitous discoveries and dogged scientific method laid the foundation for these extremely useful epidemiological tools.