Sifting the Ashes, Fall 2020, Vol. 3, No. 3

I'm Giving Away My Playbook

I recently gave a presentation to invited guests at a symposium in Knoxville sponsored by the Lincoln Memorial University (LMU) Law Review. The symposium was entitled "*Modern Forensic Science, Expert Testimony, and Exonerations as Applied to Fire Investigation*." (It was my last trip before the COVID lockdown.) As a result of my participation, I was asked to write an article for the LMU Law Review. This was to be my first law review article and I quickly learned that it was much more involved than writing for a peer-reviewed scientific journal. Every affirmative statement had to be footnoted. As a last resort, I was allowed to reference my own book. It was interesting but this will probably be my last law review article.

My paper, entitled "A Model for Confronting Fire Investigation Errors," may be found here: https://lmulawreview.scholasticahq.com/article/16660-a-model-for-confronting-fire-investigation-errors. The paper essentially gives away the playbook I have been using to advise attorneys litigating fire cases for the last decade. The strategy has been very effective (most of the time) and in publishing this paper, I am hoping it becomes less so. The idea is that fire

investigators wishing to avoid embarrassing challenges will become more educated and thus better prepared to withstand challenges. The paper addresses the following questions:

- Is this alleged arson fire actually an arson?
- Is this arson investigator actually qualified to render opinions?
- Did the investigator employ appropriate methodology in reaching his opinions?
- Is origin determination even a valid forensic science discipline?

The paper includes four case analyses: two arson cases (GA v. Carr and Michigan Millers Mutual v. Benfield) and two accidental cases (Weisgram v. Marley and Truck Insurance v. Magnetek). I hope you find this a worthwhile read.

How Can So Many Lawyers and Judges be So Mathematically Challenged?

A recent (July 2020) Third Circuit Court of Appeals case deals with a *Daubert* challenge (motion to exclude) to a long-time electrical expert that was denied by the trial court and upheld by the Appeals Court. It is not surprising that the trial court was upheld given the standard of review, which is *abuse of discretion*. This is a very tough standard. "We review the District Court's decision for abuse of discretion, and will not disturb its decision unless no reasonable person would adopt the district court's view." The case turned on just how much speculation can an expert engage in when arguing that this cause or that cause was not thoroughly ruled out, but the fact that I found most interesting was that the Appeals Court twice referred to the expert's extensive experience. At page 4, the Appeals Court wrote, "At the time of his testimony, [the expert], a qualified forensic expert in 30 states, had served on arson task forces, investigated over 12,000 fires, and taught hundreds of classes on fire causes and origin investigations." Later, at page 6, the Court wrote, "…he described the methods of fire investigation under NFPA and the methods he knew should be employed based on his experience of examining over 12,000 fires over the course of his 30-year career as a fire investigator."

I understand that if attorneys and judges were whizzes at math and science, they would probably have found another career, but how mathematically astute does one have to be to divide 12,000 by 30? There were at least two adverse experts, four adverse trial lawyers, a District Court judge and three Appellate Court judges who apparently didn't bat an eye when this "expert" claimed to have conducted 400 investigations every year for thirty years. He was clearly lying, and had

he been called out on this lie in front of the jury they may not have believed anything else he said. I will not call it "overstatement" or "exaggerating." The witness lied. I have previously (in 2002) seen this "expert" claim 16,000 fires in 21 years or 760 per year, [1] so he's toning the lie down a bit, but still. How do we tolerate such people in our midst? You can access the Third Circuit opinion here: http://www2.ca3.uscourts.gov/opinarch/182570np.pdf

[1] P. Trexler, *Prosecution Expert Rejects Short as Cause*, Akron Beacon Journal (February 8, 2002).

Smoke But No Fire

Smoke But No Fire is a new book by Jessica Henry about "no crime" wrongful convictions. About one-third of the exonerations listed in the National Registry of Exonerations are cases in which the conviction was overturned because it was determined that there was no crime. Accidental fires wrongly labeled arson fall into this category. At various places in the book, Ms. Henry discusses the following arson cases:

- Texas vs. Cameron Todd Willingham (not an exoneration)
- New York vs. Amaury Villalobos et al. (three men exonerated after 35 years)
- Utah vs. Herbert Landry (conviction overturned based on the admission of unconfirmed canine alert)

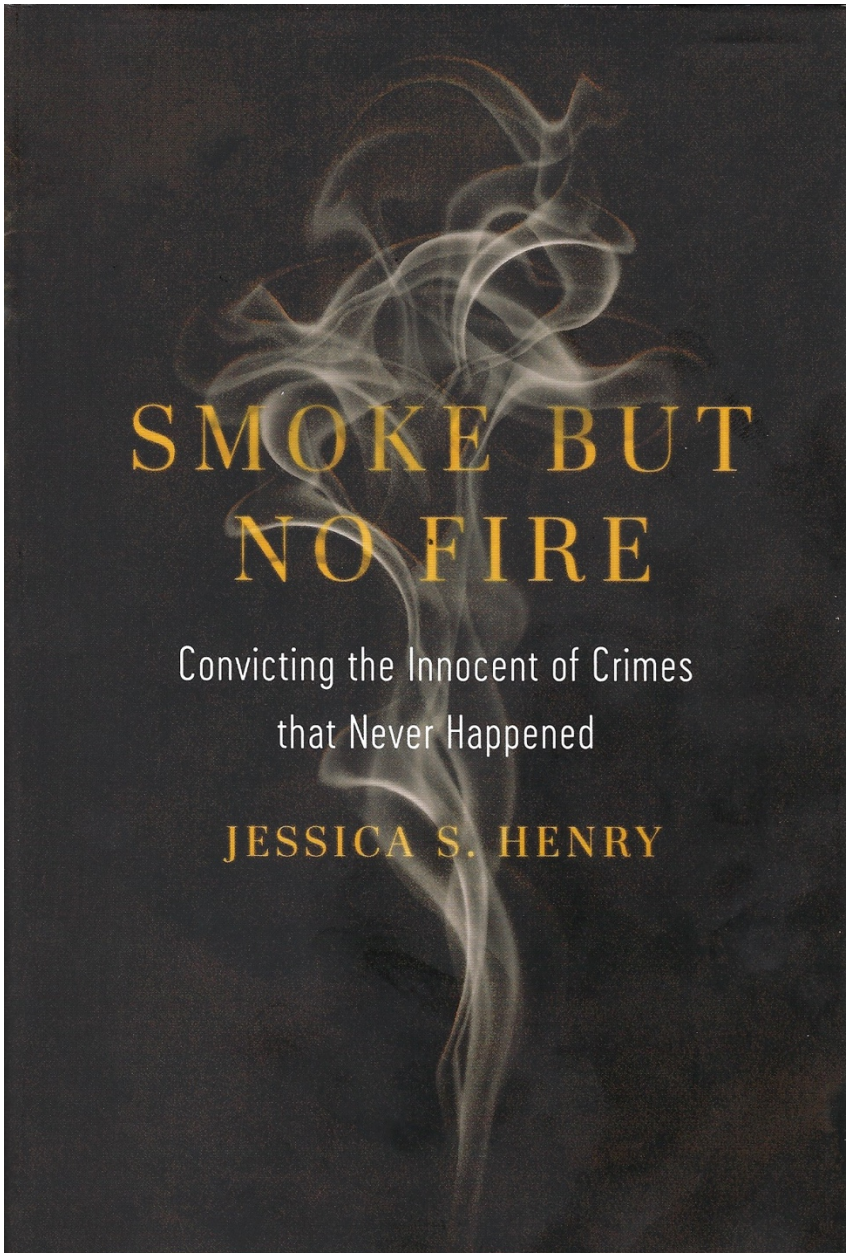
(https://www.law.umich.edu/special/exoneration/Pages/browse.aspx)

The number of "no crime" exonerations is especially high when one considers how difficult it is to obtain an exoneration, especially in cases where there is no DNA. Most of the exonerations listed on the registry are SODDI (some other dude done it) exonerations where DNA or other compelling evidence proves the innocence of the wrongly convicted person. In "no crime" exonerations, it is necessary to prove that no crime happened, which, as I have learned from experience, is a very difficult undertaking.

The author does not spare any participants in the justice system when examining how these wrongful convictions occur, but the first group she goes after is forensic scientists who misclassify accidental fires as arsons or accidental or suicidal deaths as homicides.

After forensic scientists, the author takes on police who refuse to cross "the thin blue line," prosecutors who want to win at all costs, defense lawyers who are either overwhelmed with cases or don't know the law, and finally judges, who are supposed to keep the process fair.

Many of the exonerations discussed involved guilty pleas, wherein prosecutors overcharged and then demanded, without letting the defendant know how good (or bad) the evidence was, that they accept the plea now or get ready for trial, which might not happen for a year or two, while they wait in jail. "Trial penalties" often increase the penalties from a few year's probation to many decades in the penitentiary. Judges don't get involved in plea agreements until they are put forward for approval.



Amazon .com

One of my favorite quotes from the book is actually a quote from an article by the criminal justice journalist Radley Balko in the (2/28/17) Washington Post.

> We don't ask judges to perform regression analyses. We don't ask them to design sewer systems, hit fastballs or compose symphonies. We know that they aren't qualified to do any of those things. Judges are trained to perform legal analysis. No one goes to law school to become a scientist. Few go to medical school or enroll in a Ph.D. program in the sciences because they have a penchant for law. The two fields represent two entirely different ways of thinking, are governed by two entirely different epistemologies and employ two nearly incompatible methods of analysis. And yet for some reason, we have decided that when it comes to the critically important issue of assessing the validity of expert testimony that could send someone to prison, or to the execution chamber, we will defer to the scientific knowledge of… Judges.

Ms. Henry offers several potential solutions to the problem of "no crime" wrongful convictions, including bail reform, a more rigorous enforcement of *Brady v. Maryland* (i.e., an open file discovery system) reduced caseloads, more education for all participants in the system, and conviction integrity units.

Anyone who participates in the criminal justice system would be well served by reading this book. The book is available from Amazon.com

Revisiting the Legacy of the 1980 Fire at Stauffer's Inn

This fire in Westchester County, NY resulted in an overturned arson conviction. The lead investigator was interviewed and revealed that the "gasoline like substance" found in a debris sample was probably a binding agent used on the concrete. Once again, this story points out the need for comparison samples in all cases where the presence of an ignitable liquid is hypothesized.

But more importantly, in combination with the MGM Grand fire in Las Vegas, just two weeks earlier, lessons learned from this fire led to a massive safety overhaul of fire codes related to the hotel industry. An article and a five-minute video from Fox 5 New York on the fire may be found here: https://www.fox5ny.com/news/revisiting-the-deadly-stouffers-inn-fire-of-1980-the-tape-room

Case Study:

When Multiple Origins Might Not Signify Intent

I review quite a few fire cases for public defenders, and more often than not, I reach a conclusion that is the same or close to the conclusion reached by the investigator who determined that the fire was, in fact, intentionally set. This case was different.

In previous case studies, I have named names, but in this case, I am constrained by a non-disclosure agreement that has been modified to allow me to tell this story. The defendant's name and the city where these events took place are not important for our purposes today.

The fire occurred in 2018 on a hot June night in the basement apartment of a 10-unit, three-story building. Damage was limited to the apartment of origin. The fire caused significant injuries to the tenant in the apartment, who had to spend eight weeks in the hospital due to severe second- and third-degree burns, and her injuries resulted in the loss of her left hand. She had been found unresponsive in the living room of her apartment next to a burning sofa.

I was not retained until mid-August after a preliminary hearing. Counsel told me that the fire had been determined to be incendiary based on a finding of three areas of origin. I have seen cases where the multiple origins are only visible to people with "special expertise," but this was not one of those times. I asked counsel if she could see the three points of origin for herself and she responded in the affirmative.

At this point it looked like another case where we would both conduct our due diligence, and I would provide counsel with sufficient guidance to help her avoid being ineffective in representing her client. When I got the file, however, things changed.

Figure 1 shows the fire investigator's diagram of the apartment, and the three origins are numbered 1, 2, and, 3. Origin #1 was declared to be at the corner of the sofa in the living room and is shown in **Figure 2**.

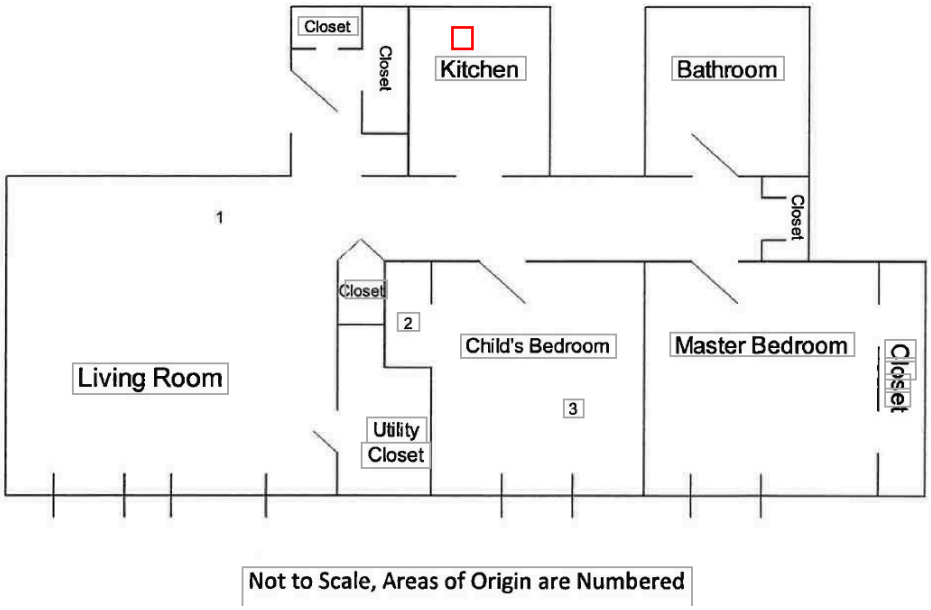


Figure 1. Sketch from the original fire investigation report. Three origins were numbered, probably in reverse temporal order. The fourth origin, indicated by the red box in the Kitchen, was missed.

Figure 2. Fire damage on the living room L-shaped sofa. The origin was identified as being at the corner of the sofa indicated by the red arrow. The victim was found face down in front of the sofa. This was identified as origin #1.

Origin #2 was determined to be in the closet in the child's bedroom, which was directly across the hallway from the kitchen. The fire in the closet is shown in **Figure 3**.

Figure 3. Isolated fire damage in the child's bedroom closet. This was identified as origin #2.

Origin #3 was located at the foot of the bed in the child's bedroom and is shown in **Figure 4**.

This appeared to be a reasonably straightforward investigation, but there was a confounding influence in the form of the tenant who was in the apartment at the time of the fire.

NFPA 921-17 provides guidance about the necessity of considering human behavior when evaluating fire spread. Specifically, Chapter 11 on Fire-Related Human Behavior advises,

> **11.7.1** The spread of the fire can be affected significantly by the actions or omissions of the people present before or during the fire. These actions can either accelerate or retard the spread of the fire. The investigator may need to evaluate these actions to determine the effects these actions had on the fire. Some of these actions include opening and closing doors or windows, fire fighting, operation of fire protection systems, and rescue.

Figure 4. Isolated fire damage on the bed in the child's bedroom. This was identified as origin #3.

The original fire report stated,

> Kitchen: The kitchen was damaged by soot and smoke. Smoking materials were located inside the kitchen but no fire was observed in the area of the smoking material. Examination of the stove/oven revealed it was in the off position at the time of this event and did not cause this event. This event did not originate in the kitchen.

The report then showed two photographs labeled "No Fire Damage in the Kitchen." The photographs are reproduced below as **Figure 5**. The strongly-worded statement, "This event did not originate in the kitchen," would probably have sufficed to destroy the investigator's credibility with the jury, but fortunately, that was not necessary.

I always request that when photographs are provided, they be provided in JPEG format. It is easier and sometimes necessary for photographs to be provided in PDF, but these generally have about 10% of the resolution possible from a JPEG. Fortunately, I had JPEGs to work with in this case. As such, I was able to zoom in on details that were not necessarily the main subject of the images.

Figure 5. Two photographs reproduced from the Origin and Cause Report (PDF) said to demonstrate "No Fire Damage in the Kitchen."

I observed that there was a cast iron skillet on the right rear burner, and that upon closer inspection, (See **Figure 6**) burned food could be seen in the skillet. There was also an open bottle of cooking oil on the counter. I also noted that the burner control knob for the right front burner was **not** in the 12 o'clock (off) position, and I further noted that there was a "halo" around the right front burner. The right front burner appears to have been both hot and protected during the fire. Another indication of fire in the kitchen was the diffuser for the overhead fluorescent light that had melted and fallen to the floor.

Figure 6. Closer view of the photo (JPEG) from the right side of **Figure 5**, showing a halo around the right front burner, and the burner control not at 12 o'clock. Burned food is visible in the cast iron skillet, but this apparently escaped the attention of the first investigators. Overlooking critical data is one of the leading causes of incorrect origin and cause determinations.

Figure 7. Burned food in the cast iron skillet located on the right rear burner, but which was actually on the right front burner when the fire started.

At my request, an investigator from the public defender's office visited the scene and photographed and collected the skillet, shown above in **Figure 7**.

I believed that I had found a fourth area of origin, which actually was the first origin.

The fire occurred in mid-June, and there was a preliminary hearing in early August. It was after the preliminary hearing that counsel retained my services. I prepared a report in early October which was turned over to the Prosecutor.

Very shortly thereafter, investigators returned to the scene and retrieved the stove. At that point, the investigators learned something new. There were two "Auto-Out" fire extinguishers located in the hood above the range. These devices are mounted using a magnet attached to the hood and are designed to activate only when the fire directly ignites the fuse. The fuse is like those found

in firecrackers. It will not respond to smoke or even heat. Actual flame contact is required. Product specifications may be found here:

https://www.auto-out.com/product-page/auto-out-venthood-pair

The Prosecution's experts noted the presence of what I had described as a "halo" and stated, "Patterns consistent with oil splatter were identified around the front right surface element, … This pattern was not observed around the other three stove top elements." Thus, this fresh examination gave at least some credence to the possibility of an additional origin on the range top.

Based on the existence of the Auto-Outs, however, the Prosecution's experts formed the hypothesis that ***if*** the fire had originated on the range as I had hypothesized, ***then*** one of these devices would have functioned and put the fire out. They were confident that they could disapprove the defense hypothesis.

To their credit, they actually tested their hypothesis, using different quantities of cooking oil in a similar skillet on the same range. When 100 mL (3.4 oz.) of cooking oil was ignited, the fire burned itself out without activating the Auto-Outs. The quantity of oil was doubled to 200 mL (6.8 oz.) and again the oil caught fire but failed to cause activation of the extinguishing devices.

It was only when 635 mL (21.5 oz.) of oil was ignited that the Auto-Outs activated—both of them. 635 mL was the maximum quantity of oil that could have been present because that was all that was missing from the 48-ounce (1420 mL) bottle of oil.

Interestingly, when the devices did activate, they failed to extinguish the oil. So, in two of the three scenarios involving Auto-Out devices, the devices failed to activate. I was provided with all of the data from the tests and at first expected to find new evidence disproving my hypothesis, but the testing actually supported it (or, at least, failed to disprove it). I had not been aware of the existence of the Auto-Outs when I prepared my report because they had not been previously documented. It was not long after I completed my review of the May 2019 report on the testing of the range and Auto-Out devices that the Prosecution made the appropriate decision to dismiss the arson charge.

I had previously seen and written about the results of an investigation with a similar fact pattern. A fire victim was found lying in the hallway of his apartment, and the only significant fire damage in the apartment was immediately on and adjacent to the victim. It was only because an astute fire investigator looked in the kitchen and found evidence of a cooking fire that had self-extinguished that the actual cause of the fire was determined. I actually used the photograph of the victim (the photo is on the next page) in my report to illustrate the potential confounding influence of having people in your fire scene.

In this case, the tenant was cooking and allowed the food to catch on fire. Because she was in the hospital in a medically induced coma for a significant period of time, she was unable to recall the events on the night of the fire, but the most likely scenario is that she caught herself on fire while trying to extinguish the burning food, then ran into the child's bedroom where she fell down and inadvertently ignited the bed. She was able to get back up, but on her way out of the bedroom, inadvertently ignited clothing hanging in the closet. She finally came to rest in the living room next to the sofa where she was found.

The take-away lesson is to examine all the evidence carefully and ***consider alternate hypotheses***. In his last (and in my humble opinion, his best) book, Carl Sagan put it succinctly.

> "Try not to get overly attached to a hypothesis just because it's yours. It's only a way station in the pursuit of knowledge. Ask yourself why you like the idea. Compare it fairly with the alternatives. See if you can find reasons for rejecting it. If you don't others will" [1]

Upon finding three areas of origin, the initial investigators formed the understandable hypothesis that someone must have set this fire, and as the only person inside the locked apartment, the tenant was the obvious person to suspect. Overlooking the evidence in the kitchen almost caused a miscarriage of justice.

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[1] Sagan, Carl, (1995) *The Demon Haunted World: Science as a Candle in the Dark*, Random House, New York, 210. Available at http://www.metaphysicspirit.com/books/The%20Demon-Haunted%20World.pdf
(last visited September 16, 2020). The pdf of this book is available for a **free download**.

Figure 4.6 (from ***Scientific Protocols for Fire Investigation***) The only significant fire damage in this residence was in the immediate vicinity of the body. The victim's clothing was ignited by a small cooking fire that self-extinguished. (Photo courtesy of Mick Gardiner.)

Scientific Protocols for Fire Investigation, Third Edition Recognized as One of the Best Forensic Science Books of All Time!

I'm pleased to announce that my book, "***Scientific Protocols for Fire Investigation***, Third Edition (Protocols in Forensic Science)," made it onto

BookAuthority's Best Forensic Science Books of All Time:

It is #5 out of 100, and the highest-rated fire investigation textbook!

Reviews of the Third Edition from Amazon.com

Dr. Craig Beyler:

A Must-Read Book for All Fire and Explosion Investigators

Scientific Protocols for Fire Investigation is a must-read for every fire and explosion investigator. John Lentini is an experienced and highly regarded fire investigator and chemist. Importantly, he is also a great writer. His use of a combination of direct explanation and case studies is very effective. Through this approach, he keeps the reader's attention and brings points home more than once. His approach to writing allows the reader to think they discovered the concepts he amplifies through case studies, firmly cementing the concepts for the reader. It's a book you will keep on your desktop.

Steve Carman:

A Must Have (and Must Read) for Fire Investigators

The 3rd edition of ***Scientific Protocols for Fire Investigation*** is most certainly a book that professional fire investigators and those seeking a more complete understanding of the science of fire investigation should have in their library. John Lentini has presented an up-to-date digest of the science and practices at the center of our profession. In recent years, the importance of understanding the role of ventilation in structure fires has gained much attention. In this book John offers readers an easy-to-read synopsis of this science and an explanation of how and why it must be at the forefront of every investigator's mind particularly when investigating fully involved structure fires.

The advancement of NFPA 921 in the last twenty years has moved our profession in a positive direction. This book takes that progression even further towards an even more thorough approach to the practice of this important forensic science.

Steve Riggs:

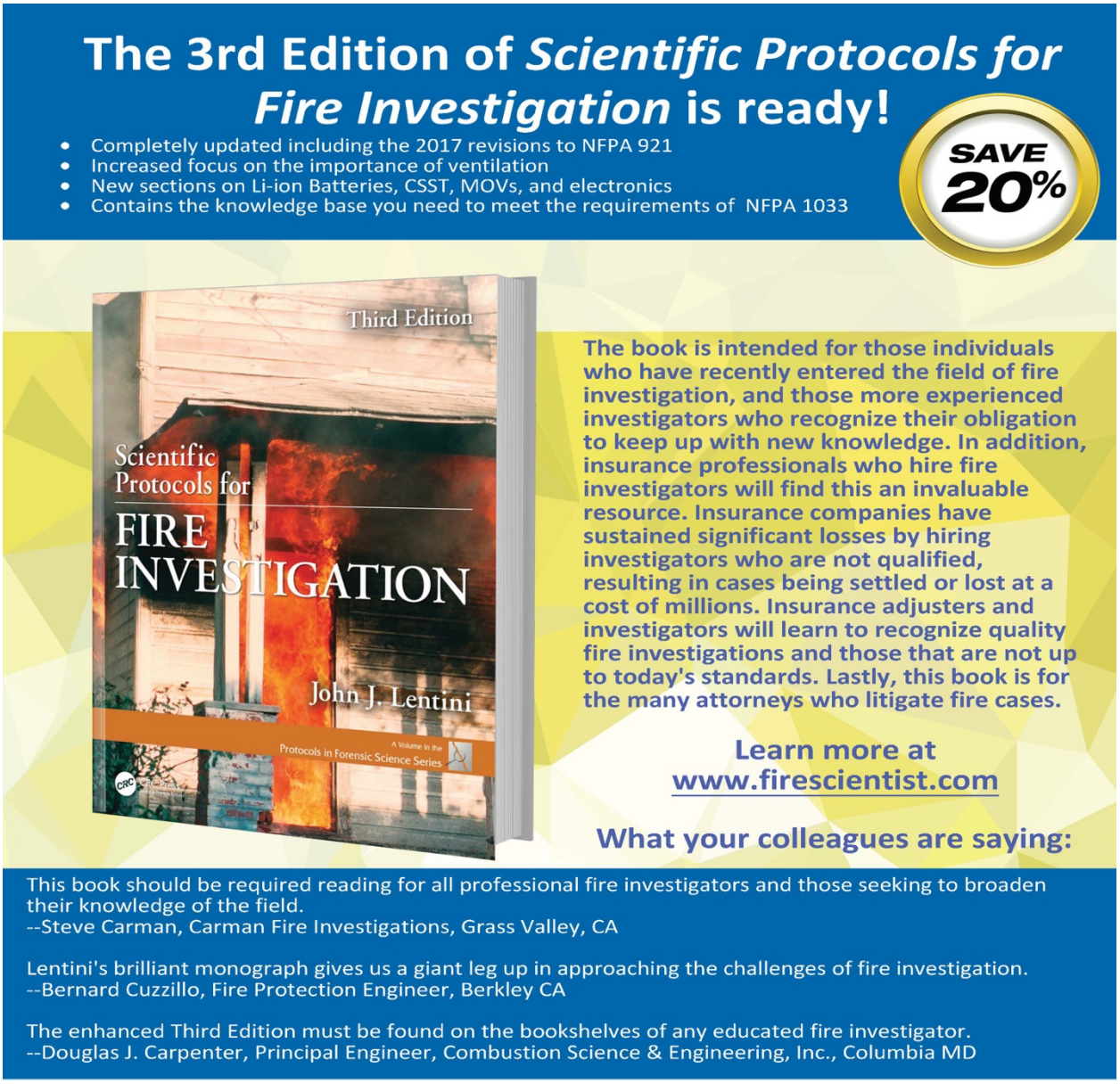
Best Edition Yet

I would highly recommend this edition to anyone who wants to expand their knowledge in the area of fire investigations. I have the first and second editions, but this edition is absolutely the best of all. This is a great edition to add to your personal library.

Wayne Chapdelaine:

A Must Have Book in Every Fire Investigators Library

Scientific Protocols for Fire Investigation is a text that all professional fire investigators must read.



We have a new vendor for the book, **The Fire Fighter's Bookstore** and they are offering a 20% discount off the publisher's list price. ($79.16 + shipping) Go to:

https://www.firebooks.com/products/scientific-protocols-for-fire-investigation-3rd-edition?_pos=8&_sid=3b6cfbbf2&_ss=r

For information about setting up a **3-day course at your facility** that uses the book as a "handout," contact me directly at scientific.fire@yahoo.com