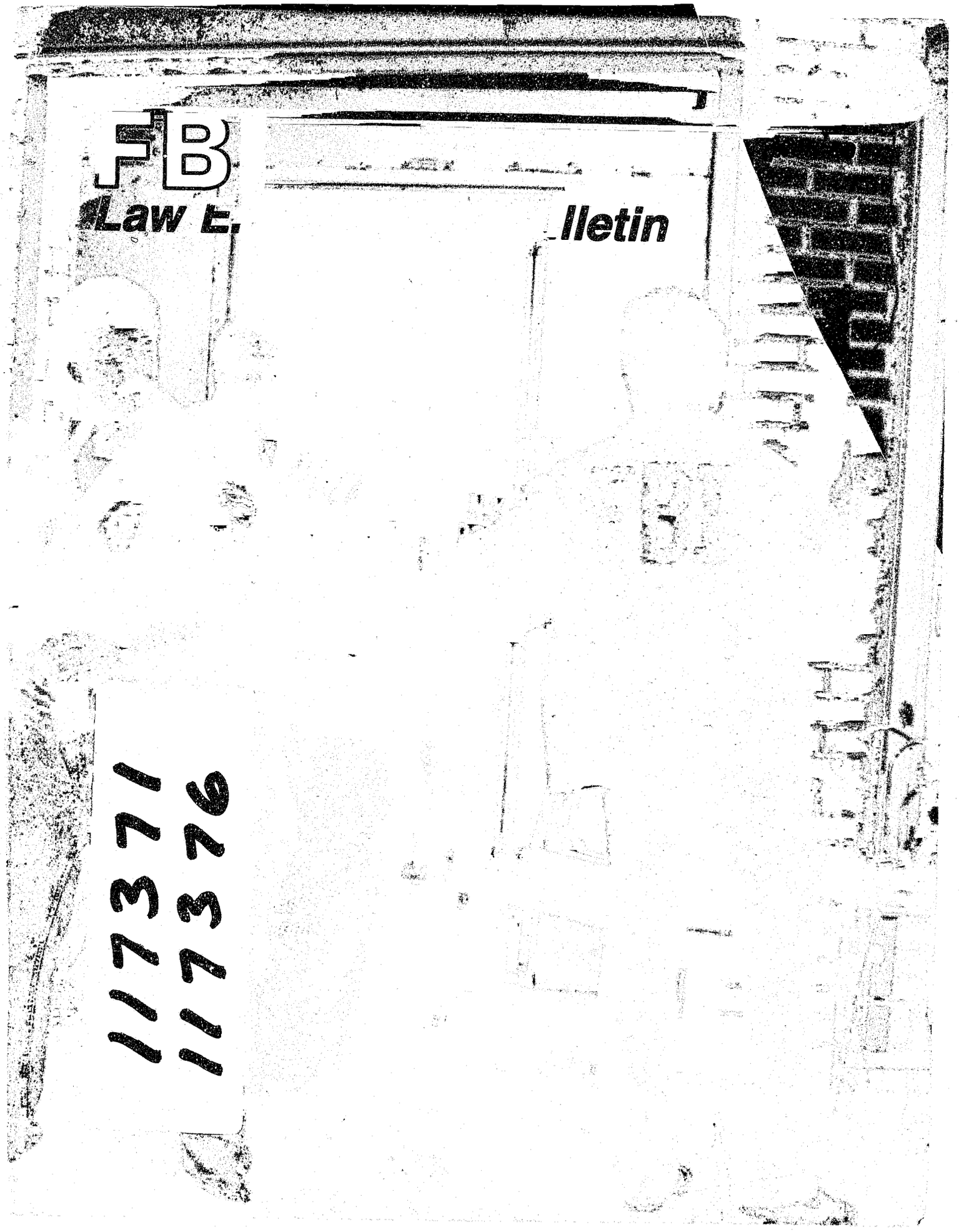

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The Use of Canines in Arson Detection

By
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Long considered by many as man's best friend, the dog has also become a proven arson investigative aid, especially in the State of Maryland. Since 1987, the Maryland State Fire Marshal's Office has extensively trained canines in arson detection. Impossible? Highly unlikely? On the contrary, canines, particularly Labrador retrievers, have been used to seek out accelerants to assist arson and fire investigators.

The Beginning

When the Maryland State Fire Marshal learned that the Bureau of Alcohol, Tobacco and Firearms (BATF), in conjunction with the Connecticut State Police, was training a dog to detect arson accelerants, he realized the potential value for his department. He assigned a deputy chief, who had more than 40 years of dog handling and training experience, to investigate the feasibility of using arson canines in Maryland. What the deputy chief learned represents a viable investigative technique.

Specifically, BATF determined that a canine can be conditioned to respond to an accelerant odor using the traditional Pavlovian technique. To start, a dog is "imprinted" with an accelerant odor. As the canine searches an area and finds a spot where an accelerant is located, he is trained to sit. If the canine correctly

responds, the handler rewards the dog with food, a ball, and/or praise.

The Dog Versus Technology

Conditioned dogs can respond to an odor with potentially greater accuracy than current field accelerant detection devices. Whereas common mechanical hydrocarbon detectors are sensitive to accelerant components in the parts-per-million range, canines can also differentiate between accelerants and similar chemical gases normally found at a fire scene.

Field accelerant detection instruments have limited ability in detecting various types of hydrocarbons. As a result, false-positive readings are a common occurrence, since many classes of compounds are formed as fire chemically alters synthetic materials. For example, plastics, which are composed of hydrocarbons, are also found in accelerant products. During a fire, plastic breaks down to form individual hydrocarbons which can be detected by field accelerant detection instruments. This can result in a false-positive reading. Final determinations as to whether this indicates a bona fide accelerant used to start the fire, or a false-positive reading, requires further analysis by a gas chromatograph.

Training and Conditioning

Since the Maryland program began, three dogs, all black Labrador retrievers, have been fully trained in arson detection. These dogs are on call 24 hours a day with their respective handlers for response to possible arsons throughout Maryland or adjacent States.

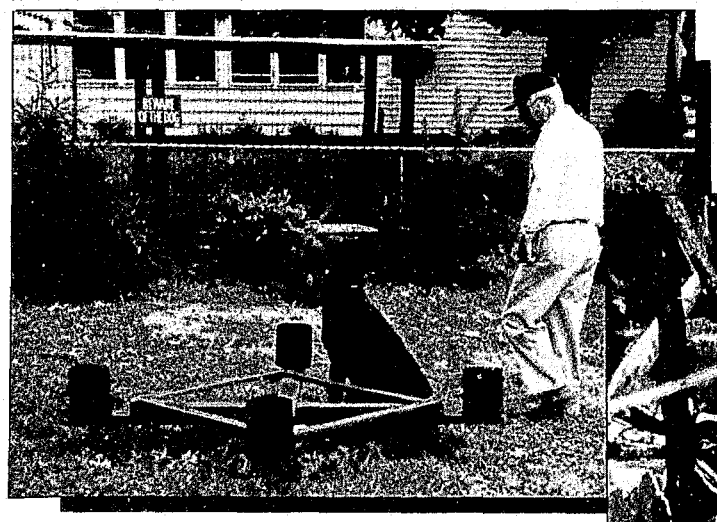
To reinforce training procedures, the dogs travel to fires that have been determined by investigators to be accidental incidents. With the permission of the property owner, the arson canines walk around the property so that they get used to the odor of burned items. Handlers may also "set up" an area by placing one or two drops of gasoline or another type of accelerant at the scene to reinforce the dog's ability to seek and find.

An arson K-9 handler works with a dog in a systematic, clockwise pattern around the suspected area of origin. The dog is then given the command "seek." The canine then "tells" the handler when an accelerant has been located by sitting in the area where he determines the odor originates. The handler may ask the dog to "show me" the specific area of the odor. The canine will then put his nose into the spot or area where investigators should take a sample to submit to a forensic laboratory for detailed analysis.

The Maryland Program

The program has gone far beyond merely training and demonstrating dogs in arson detection. In October 1987, the Maryland State Fire Marshal's Office was called upon to investigate a $5 million fire of a lumber company and seven other businesses in Crisfield, MD. After nearly 2 days of extensive work by the fire marshal's Major Incident Response Team, an arson canine was called to the scene. Within less than 1 hour of working the scene, the dog "pointed" to an area where investigators had previously determined was the area of origin and where suspected flammable liquids had been poured. With the canine's assistance, fire marshals were able to conclude that the blaze was incendiary.

> ***"... canines ... have been used to seek out accelerants to assist arson and fire investigators."***
>
> *Deputy Chief Thomas*



K-9 "Barney" indicates the presence of a flammable product for Chief Deputy Farrell during a training exercise.

Chief Deputy Farrell and K-9 "Barney" search through debris following a fire at a shopping center.

Assisting Other Jurisdictions

Since the K-9 program's inception, the State Fire Marshal's Office has assisted several Federal, State, and county organizations in development, training, and fire scene investigations using these highly trained dogs. In February 1988, a Maryland handler and his dog demonstrated the canine arson detection program to the U.S. Secret Service K-9 handlers and trainers. In March of that same year, a special presentation was made to more than 100 Pennsylvania State troopers at the annual training seminar of the Pennsylvania State Police/Fire Marshal's Office regarding the benefits of the canine arson detection program. With the assistance of a Maryland handler and his dog, the Atlantic City, NJ, police Department K-9 Division trained five arson canines during a 1-week class.

> ***"... the nationwide use of arson canines will provide an invaluable tool to assist arson investigators...."***

The Delaware State Fire Marshal's Office has also used Maryland's arson canines on five separate occasions. One notable incident involved an arson and triple homicide at a residence in Claymont, DE. One of the dogs worked the crime scene extensively and "pointed" to several areas where a flammable liquid was believed to be located. Following an examination of the evidence collected at the scene, the dog's findings were confirmed. Within 24 hours of the fire, two individuals from New York were arrested and charged with the crimes.

Future Goals

The Maryland State Fire Marshal's Office will continue to inform and provide technical advice to other organizations and departments that are interested in the use of canines in arson detection. In addition to the State Fire Marshal's Office Arson K-9 Unit, the Prince George's County, MD, Fire Department Fire Investigations Division has started using canines in arson detection.

In the future, the nationwide use of arson canines will provide an invaluable tool to assist arson investigators in determining the cause of suspicious fires. In commenting on the arson K-9 program, the Maryland Fire Marshal stated, "A trained arson canine will not conclusively prove arson. Establishing arson requires extensive fire and police investigation into the origin and circumstances of a fire. However, the canine accelerant detection program will become another useful weapon in an investigator's arsenal to combat arson."

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