Magyar Rendészet Vol. XVI. 2016/2. 21–26.

Edmond Locard – "Father of the Crime Lab"

***BALLÁNÉ FÜSZTER Erzsébet*[1]**

Forensic science has contributed to our world a great deal. Edmond Locard was a real criminalist in the classic sense who had a paramount role in the European and worldwide development of criminalistics, the practice of gathering evidence for scientific examination and crime solving. In 1910, Locard was able to convince the police of Lyon to establish the first crime laboratory for collecting and examining evidence from crime scenes.

Keywords: *Locard, crime lab, forensic science, physical evidence, principle of exchange*

"I must confess that if, in the Police Laboratory in Lyon, we are interested in any unusual way with this problem of dust, it is because of having absorbed the ideas found in Gross and Doyle, and also because certain investigations in which we have been involved have happened, so to speak, to force the issue." – Edmond Locard (1929)[2]

For the last two decades the introduction of the work of forensic scientists has been very popular in television series, movies and books. The CSI television shows are followed by millions of people around the globe each day. The use of expert and scientific testimony has increased in recent years. Nowadays forensic science seems to be almost everywhere.

Earlier in crime stories the "clever and brave detectives" managed to solve even the most complicated cases mainly with sophisticated and logical "brain-work". Although, they sometimes required the help of crime labs, they relied solely on their capacities of observation and deduction, and thus they played the main part in crime solving, not forensic experts.

In the words of the world-famous forensic science professor John Thornton: "Without law there are no enforceable standards dealing with any scientific problem; without science there are no feasible means to resolve conflicts that inevitably accompany the many technical aspects of civilization. Law and science have become bedfellows."[3]

1 BALLÁNÉ FÜSZTER Erzsébet dr., police colonel, National University of Public Service, Faculty of Law Enforcement, Institute of Criminalistics, Department of Criminaltechnics, professor
Dr. habil. BALLÁNÉ Prof. Dr. FÜSZTER Erzsébet PhD, rendőr ezredes, tanszékvezető egyetemi tanár, NKE RTK Kriminalisztikai Intézet, Kriminálтechnikai Tanszék
Ballane.Fuszter.Erzsebet@uni-nke.hu

2 Jerry W. Chisum, Brent E. Turvey: *Crime Reconstruction*, Elsevier Academic Press, USA, 2012, 33.

3 John I. Thornton: *Uses and Abuses of Forensic Science*, 69 A.B.A. Journal, 1983, 288–91.

Forensic science – the application of methods and techniques of natural and physical sciences in criminal or civil legal disputes – has contributed to our world a great deal. With the exeption of forensic medicine, it is largely a 20th century innovation.

It is no exaggeration to say that forensic science is based on the works of a man named Edmond Locard, who is considered to be the father of it. Edmond Locard had a paramount role in the European and worldwide development of criminalistics, the practice of gathering evidence for scientific examination and crime solving.

Dr. Edmond Locard (13 December 1877, Saint-Chammond, France – 4 May 1966) became known as the "Sherlock Holmes of France". He studied medicine and law. His interests ultimately branched to include science and medicine in legal matters. He obtained his doctorate degree in medicine in 1902. He began his professional career at the University of Lyon, by assisting the French medical doctor Alexandre Lacassagne (1844–1921), who is often referred to as the father of modern forensic medicine. Later, Locard decided to study law, and in 1907, he passed the bar examination. As a medical doctor and an attorney Locard had the necessary educational background and motivation to develop his passion and realise his dream.

The works of the Austrian Hans Gross and the Scottish physician and writer, Sir Arthur Conan Doyle inspired Locard. Their works were not only a major influence on Edmond Locard, but on forensic science as well.

Hans Gross is often considered as one of the founders of criminalistics, and is regarded as the father of criminal investigation, even to this day. "The release of his book 'Handbuch für Untersuchungsrichter, Polizeibeamte, Gendarmen' (Handbook for Coroners, Police Officials, Military Policemen) in 1893 is marked as the birth of criminalistics."[4] Gradually Hans Gross worked out the term "Criminalistics" using the "System Der Kriminalistik" (System of Criminalistic) expression for the first time as a subheading in his work which contained the basic elements of criminal investigation.

Locard was born in the same year when Sir Arthur Conan Doyle published his first story – "A Study in Scarlet" – featuring the iconic English detective Sherlock Holmes.

Doyle, who attended the University of Edinburgh Medical School and ran his own medical practice before writing full time, had a "Bachelor of Medicine and Master of Surgery" degree. He is most noted for his Sherlock Holmes detective stories and for bringing the greatest of all detectives to life. "Conan Doyle's fictional outpourings were the direct result of his hidden career as an amateur detective and criminologist."[5] The stories of Doyle made "a major influence on real life detective work and the art of criminal investigation."[6] Many of Holmes' methods of deduction were actually methods that Doyle used to solve real crimes in the real life while helping Scotland Yard. "Edmond Locard himself was very familiar with the adventures of Sherlock Holmes,"[7] whose character inspired him to form the core of his attitude towards the forensic approach of crimes.

4 https://en.wikipedia.org/wiki/Hans_Gross (10.05.2016)
5 www.goodreads.com/book/show/76124.Conan_Doyle_Detective (10.05.2016)
6 http://science.howstuffworks.com/locards-exchange-principle2.htm (10.05.2016)
7 http://science.howstuffworks.com/locards-exchange-principle2.htm (10.05.2016)

In 1908 Locard decided to travel the world to study how police agencies in different European and American countries used the scientific methods and trace evidence analysis for crime solving. He visited police agencies in Paris, Lausanne, Rome, Berlin, Brussels, New York and Chicago (Chisum and Turvey, 2011).

During his trip he did not find any countries equipped with a special laboratory for the investigation of the traces of crimes. It was because by 1915 only three American states in New England and the city of New York had replaced their coroner systems with a more progressive medical examiner system. The first operational crime laboratory in the US was established in 1923 in Los Angeles, which was followed by the Scientific Crime Detection Laboratory at Nortwestern University in 1929, and the lab of the Federal Bureau of Investigation in 1932. Despite what can be read in Doyle's novels, the first forensic laboratory in Great Britain wasn't created only until 1935 (Thorton, 1983).

The first university level workshop of forensic science was in Switzerland, the Institut de Police Scientifique et de Criminologie which was established at the University of Lausanne by Professor Rudolph Reiss in 1909. It was the first university from where a special degree in forensic science could be obtained. In the unstitute of Reiss there were special courses in forensic photography and crime scene investigation. After having visited Professor Reiss in Lausanne, Locard decided to create his own laboratory dedicated specially for criminal purposes.

In 1910, Locard was able to convince the police of Lyon to establish a laboratory for collecting and examining evidence from crime scenes. They provided him with two rooms in the attic of the Law Courts house and two Surete officials as assistants in order to set up his laboratory. "The laboratory was reached through a gloomy entrance hall from which one corridor let to the prison and a dirt-stained door into the dusty caves and archives. Every day Locard climbed the steep winding staircase leading to his laboratory four floors up."[8]

Locard's enthusiasm overcame shortage of money and became internationally famous in short time. His laboratory received world recognition and many great criminalists obtained their knowledge and experience under the guidance of Locard in the years that followed.

In the next few decades, several other police laboratories were created based on the model and influence of Locard. Even after World War II, the French police served as a model to many other countries. Locard was the driving force behind the development of modern scientific and technical police.

Locard was to advocate the application of scientific methods to criminal investigation. He deeply "believed that when any person comes into contact with another person or an object, no matter where a criminal goes or what a criminal does, he will leave something at the scene of the crime and at the same time, he will also take something

8 Jurgen Thorwald: *Crime and Science: The New Frontier in Criminology*, Harcourt, Brace et World, New York, 1966, 283.

back with him,"[9] so it is inevitable that a cross-transfer of physical evidence occurs. By his own words in 1934: "Toute action de l'homme, et a fortiori, l'action violente qu'est un crime, ne peut pas se dérouler sans laisser quelque marque. L'admirable est la variété de ces marques. Tantôt ce seront des empreintes, tantôt de simples traces, tantôt des taches."[10] (Any action of an individual, and obviously, the violent action constituting a crime cannot occur without leaving a mark. What is admirable is the variety of these marks. Sometimes they will be prints, sometime simple traces, and sometimes stains.)

This statement and another often citated form of it: "with contact between two items, there will be an exchange" makes the basis of Locard's Exchange Principle or Locard's Theory. It is very interesting that Locard's publications make no mention of an "exchange principle," the principle itself, as the form in which it became known all over the forensic society, had never been actually written by Locard himself. The term "principle of exchange" first appeared in the book titled *The Police and Crime-Detection To-Day* by Reginald Morrish in 1940, and had been adapted from Locard's observations.[11]

The detailed description of Locard's scientific establishment known as the Locard's principle comes from Paul Kirk, whose words have repeatedly been mistaken for those of Locard.

The Exchange Principle in Paul Kirk's words from 1953 is the following:

"Wherever he steps, whatever he touches, whatever he leaves, even unconsciously, will serve as a silent witness against him. Not only his fingerprints or his footprints, but his hair, the fibers from his clothes, the glass he breaks, the tool mark he leaves, the paint he scratches, the blood or semen he deposits or collects. All of these and more bear mute witness against him. This is evidence that does not forget. It is not confused by the excitement of the moment. It is not absent because human witnesses are. It is factual evidence. Physical evidence cannot be wrong, it cannot perjure itself, it cannot be wholly absent. Only human failure to find it, study and understand it can diminish its value."[12]

Kirk worked as a professor of biochemistry at the University of California in Berkeley and – as described by Thorwald – "was a criminologist in the classic sense, a legendary forensic science educator, a forensic generalist and one of the foremost pioneers of scientific criminology and criminalistics in the world."[13]

"Edmond Locard had a paramount role in the European and worldwide development of criminalistics, the practice of gathering evidence for scientific examination and crime solving."[14] Dr. Locard was the pioneer of modern criminalistics. He was the first, who classified physical evidence as "prints or traces" and "stains". In his system, prints and traces might come from finger, face, lip, hand buttock, body tooth, shoe,

9 http://science.howstuffworks.com/locards-exchange-principle2.htm (10.05.2016)
10 Edmond Locard: *La police et les methods scientifiques*, Éditions Rieder, Paris, 1934, 8.
11 Reginald Morrish: *The Police and Crime-Detection To-Day*, Oxford University Press, London, 1940, 72.
12 Paul L. Kirk: *Crime investigation: physical evidence and the police laboratory*, Interscience Publishers, New York, 1953, Introduction.
13 Jurgen Thorwald: *op. cit.*, 149.
14 www.encyclopedia.com/doc/1G2-3448300353.html (10.05.2016)

clothing, animal, forced entry, objects left behind, hair, dust or parasites. Stains could be blood, semen, amniotic, faeces, urine, mucus, food, candle, grease, house paint, dyes and pigments and rust. According to Locard, the burden of proof needs and contains four main elements: providence (ordeals and combats), confession, witness testimony and physical evidence.

As Harry Söderman the Swedish criminalist, to whom Locard became a mentor, summarised Locard's contribution and wrote of Locard in 1956: "He put the analysis of handwriting on a firmer footing, systematized the analysis of the dust in the clothes of suspects, invented a modified method of analysing blood stains, and invented poroscopy, whereby the pores is the papillary ridges of fingerprints are used as a means of identification."[15]

When Eric Stauffer, M.S. (forensic scientist at Applied Technical Services, Inc., Fire and Explosion Investigations, Atlanta Industrial Drive), evaluated Locard's work in 2004 at the annual meeting of American Academy of Forensic Sciences, he established that Locard's method of reasoning was probably the most important concept in forensic sciences, and the general process of trace evidence analysis. Locard's investigations included the following questions in this order: What is the trace? What is its composition and characteristics? How can this trace be linked to its origin or to another trace (or what are the pertinent characteristics that will be used for the comparison process)? How can that be accomplished (or what instrumentation/technique is needed to analyze these characteristics)? Locard's cognitive process emphasised the trace evidence and not the techniques used to analyse it.[16]

"Locard published more than 40 works in French, English, German, and Spanish. His most famous work, still referenced daily, is the seven volumes of the Traité de criminalistique (Treaty of Criminalistics), published between 1931 and 1935. Many of his books represent significant contributions to the field of criminalistics and forensic scientists still often read his writings. His publications include several works about police investigations that he personally conducted. Locard was also passionate about philately (stamp collecting), and he wrote a few books on this topic."[17]

Edmond Locard was a real criminalist in the classic sence, a forensic generalist, and he educated and changed the world with his multidisciplinary and scientific approach to systematic evidence analysis (Petherick et al., 2010).

REFERENCES

Chisum, Jerry W., Turvey, Brent E.: *Crime Reconstruction*, Elsevier Academic Press, USA, 2012.
Grassberger, Roland: *Pioneers in Criminology*, The Journal of Criminal Law, Criminology and Police Science, 47(1956)/ 4. 397–405.

15 H. Söderman: *Policeman's Lot - A Criminologist's Gallery of Friends and Felons*, Funk & Wagnalls Company, New York, 1956, 25.
16 E. Stauffer: *Dr. Edmond Locard and Trace Evidence Analysis in Criminalistics in the Early 1900s: How Forensic Sciences Revolve Around Trace Evidence*, Proceedings of the American Academy of Forensic Sciences, 2(2004) X, 81.
17 www.encyclopedia.com/doc/1G2-3448300353.html (10.05.2016)

Kirk, Paul L.: *Crime investigation: physical evidence and the police laboratory*, Interscience Publishers, New York, 1953.
Locard, Edmond: *La police et les methods scientifiques*, Éditions Rieder, Paris, 1934.
Morrish, Reginald: *The Police and Crime-Detection To-Day*, Oxford University Press, London, 1940.
Nickell, Joe, Fischer, John F.: *Crime Science, Methods of Forensic Detection*, The Univerity Press of Kentucky, 1999.
Petherick, W. A., Turvey, B. E., Ferguson, C. E.: *Forensic Criminology*, Elsevier Academis Press, USA, 2009.
H. Söderman: *Policeman's Lot – A Criminologist's Gallery of Friends and Felons*, Funk & Wagnalls Company, New York, 1956.
Stauffer, E.: *Dr. Edmond Locard and Trace Evidence Analysis in Criminalistics in the Early 1900s: How Forensic Sciences Revolve Around Trace Evidence*, Proceedings of the American Academy of Forensic Sciences, 2(2004) X.
Thornton, John I.: *Uses and Abuses of Forensic Science*, 69 A.B.A. Journal, 1983, 288–91.
Thorwald, Jurgen: *Crime and Science: The New Frontier in Criminology*, Harcourt, Brace et World, New York, 1966.

ABSZTRAKT

Edmond Locard – az első bűnügyi laboratórium megalapítója

BALLÁNÉ FÜSZTER Erzsébet

Manapság még az átlagember számára is nyilvánvaló, hogy a bűncselekmények elkövetőinek rendőrkézre kerülésében a nyomozói bravúron túl a legkülönfélébb tudományoknak is döntő szerep jut. A napjainkban oly sikeres CSI-filmekből megismerte a világ, hogy milyen sokat árulnak el az elkövetőről azok a sokszor szabad szemmel nem is látható nyomok és anyagi lerakódások, amelyek egy bűncselekmény során keletkeznek. Azt viszont még szakmai körökben sem tudja mindenki, hogy a francia Edmond Locardnak milyen szerepe volt abban a folyamatban, amelynek eredményeként napjainkra az egész világot bűnügyi laboratóriumok hálózzák be. Az ő munkásságának kíván emléket állítani ez az írás.

Kulcsszavak: *Locard, bűnügyi laboratórium, forenzikus tudományok, tárgyi bizonyítékok, anyagátadás törvényszerűsége*