

ROLE OF FORENSIC SCIENCE IN CRIMINAL INVESTIGATION: ADMISSIBILITY IN INDIAN LEGAL SYSTEM AND FUTURE PERSPECTIVE

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ABSTRACT

At present time science is expanding at an ever increasing rate and forensic science- the application of scientific techniques to provide objective, circumstantial evidence- shares in this process. As a result more and more scientific evidence is being given, is becoming more and more technical and is all too often less and less comprehensible to the non-scientist. Forensic science is not an individual subject but it is an umbrella term that consists of other disciplines of science and touches almost every boundary of medical subjects. It is an exercise of common sense coupled with the experience and knowledge already acquired from other branches of medicine, obstetrics, and surgery. The evolution of the forensic science field over the past twenty-five years has made dramatic scientific breakthroughs (DNA typing, physical evidence databases, related scientific instrumentation). Due to limited resources forensic techniques are not utilized in most criminal investigations. There have been more targeted studies of DNA testing and its costs and effects upon the solution of cold cases and property crimes, but no studies examining the full array of physical evidence and the processing of cases through the criminal justice process. Examination of evidence may assist the investigator in determining how a crime has been committed. The present paper aims at to explore the applicability of Forensic science in criminal investigation and what role it plays in keeping law and order in a society. This paper also throws light on how forensic science is acting as a bridge between the medical scientists and legal scientists.

Key Words: *criminal investigation, forensic science, justice, medical jurisprudence.*

INTRODUCTION

Medical jurisprudence or it is sometimes called Forensic, legal, or state Medicine may be defined to be that science which teaches the application of every branch of medical knowledge to the purpose of law; hence its limits are on the one hand the requirements of the law and on the other, the whole range of medicine. Anatomy, physiology, medicine, surgery, chemistry physics and botany lend their aid as necessity arises; and in some other cases all these branches of science are required to enable the court of law to reach to a proper conclusion on a contesting question effecting life or property.³ Even though medical jurisprudence, forensic medicine and legal medicine are the terms commonly used to denote the branch of medicine which deals the application of the principles and knowledge of medicine to the purpose of law, both civil and criminal, they bear different

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³ The first paragraph of Alfred Swayne Taylor's Principles and Practice of Medical Jurisprudence, first published in 1865. (Medical jurisprudence was term favoured over forensic Medicine in 19th century. The former term reflecting more accurately the subjects perceived subservience to the needs of the law).

meanings. Medical jurisprudence embraces all questions which affect the civil or social rights of individuals as well as cases of injuries to persons and brings the medical practitioner in contact with the law. Medical jurisprudence embraces all questions which affects the civil and social rights of individuals, as well as cases of injuries to persons, and brings the medical practitioner in contact with the law. Thus, medical jurisprudence deals with the legal aspect of medical practice, while forensic medicine deals with the application of medical knowledge to the administration of law. Forensic science is in all a very comprehensive term. In its broadest definition, forensic science is the application of science to those criminal and civil laws that are enforced by police agencies and courts.

The term “state medicine”, recommended by Dr. Stanford Emersion Chaille in 1949, is being rejected worldwide. In Europe and the United States of America, the term legal medicine is often preferred. However in most parts of world the term Forensic Medicine is widely accepted.⁴ The credit for establishing forensic medicine on a systematic basis in Britain is usually given to Andrew Duncan (1744-1828), professor of institute of medicine at university of Edinburg, who in 1806 successfully persuaded the government to establish a reguis chair in medical jurisprudence and medical police. About the wide social usefulness of forensic medicine Duncan said:⁵

*..... to defend the injured innocence against the shafts of groundless suspicions or malevolent calumny- to detect atrocious guilt though concealed with the deepest art – or to deal with distribution of material justice, where the person, property, or life of an individual are at stake.*⁶

Duncan listed following as the uses of forensic medicine. The criminal uses included detection of murder, infanticide, abortion, rape.

The other two sections were listed as follows:

1. State of mind: madness, melancholy idiotism.
2. Pregnancy: concealed , pretended
3. Parturition: concealed ,pretended, retarded, premature
4. The firstborn of twins
5. Diseases: Concealed, pretended or imputed.
6. Age and duration of life.

II.DEFINITIONAL ASPECT

Forensic science (often shortened to forensics) is the application of a broad spectrum of sciences to answer questions of interest to a legal system. This may be in relation to a crime or a civil action. Besides its relevance to a legal system, more generally *forensics* encompasses the accepted scholarly or scientific methodology and

⁴HWV Cox ,*Medical Jurisprudence*, seventh edn,2002,p 3

⁵ MA Crowther, *Brenda M White, Medicine, Property And Law In Britain, The Historical Journal*, 1800-1914, p 314.,853-870, 856

⁶Duncan A, *Heads Of Lectures On Medical Jurisprudence and Forensic Medicine*, 1801, p 177.

norms under which the facts regarding an event, or an artifact, or some other physical item (such as a corpse) are ascertained as being the case. In that regard the concept is related to the notion of authentication, where by an interest outside of a legal form exists in determining whether an object is what it purports to be, or is alleged as being. The word *forensic* comes from the Latin adjective *forensis*, meaning "of or before the forum".

Forensic science is acting as a bridge between the medical scientists and legal scientists. It's the science that comprises of the matters that provide a common platform to both scientists and legal professionals.⁷

Peter White has defined the term forensic science in two different senses on one is narrower sense and another is wider sense. This wide meaning covers criminal prosecutions in the widest sense, together with patrons and ecological safeguard and physical condition and protection at work, as well as civil proceeding such as violate of agreement and negligence. On the other hand, in universal practice the term is applied more narrowly to use of science in the in the investigation of crime by the police and by the courts as evidence in resolving the issue in any subsequent trial.⁸

Midwest Forensics Resource Center at the U.S. Dept. of Energy has defined Forensic Science as

"Forensic science is the application of natural sciences to the procedures of law. In practice the subject of forensic science draws its Principles and Methods from the subjects like physics, chemistry, biology and other science subjects"

California Criminalistics Institute has defined forensic science as:

"Forensic Science is the application of the methods and techniques of the basic sciences to legal issues. Forensic Science is a very broad field of study. It includes Crime Laboratory Scientists, sometimes called Forensic Scientists or, more properly, Criminalists, work with physical evidence collected at scenes of crimes."

Forensic science is the application of natural sciences to the matters of law. Forensic science is linked to physics chemistry, biology and other scientific methods and techniques. It involves recognition, identification, individualization and evaluation of physical evidence for the purpose, of administration of criminal justice. It's one of most energetic, charismatic and contemporary and exhilarating branch of science used in identifying crimes and criminals.⁹

III.NATURE OF FORENSIC SCIENCE

Forensic science is not an individual subject and touches boundaries of almost of all branches of science and applies them to purposes of law. Originally all the techniques were borrowed from different branches of science but now the forensic science has evolved and developed as a separate subject. It has also developed various branches which are more or less domains of forensic science. The science of finger printing, anthropometry, track marks, documents (especially examination of hand writing) and forensic ballistics essentially belongs to forensic science alone. This subject of

⁷ Deepak Ratan&Mohd.H.Zaidi ,*Applications Of Forensic Science In India And World*(Alia Law Agency, Allahabad, edn. 2008),page 28.

⁸ Peter White (ed.), *Crime Scene to Court The Essential of Forensic Science*(RSC Publication, Cambridge), 1998

⁹ Nayan Joshi, *Medical Jurisprudence and Toxicology* (Kamal Publishers ,New Delhi, 2008), P.23

forensic gained more momentum after the advances made in serology, voice analysis, odour analysis and studies relating to pattern recognition, digital photograph. The most significant to twentieth century is DNA Profiling for the identification of human beings. With the development in the said field the technology is now being applied to plants and animals too.

The two main pillars of forensic science are that:

- It is multi-professional.
- It is multi-disciplinary

During the utilization of forensic science, for the proper dissemination of the justice, the forensic scientist has to depend upon investigating officer, on one hand and on the presenting counsel and the judge on other hand. The investigating officer has to be specialist in the field of collecting evidence. Likewise the judge and the counsel have to know the science broadly so they can co relate the scientific evidence with the rest of the evidence. The second peculiarity is that the science is an all-inclusive science call for comprehensive Forensic Science Laboratories which should have experts in all discipline, equipment for all branches and comprehensive libraries and other required utilities.

IV.SCOPE OF FORENSIC SCIENCE

The field of forensic science is so wide and diverse that at present it has become an indispensable working horse for criminal justice delivery system. The present scenario of crime investigation and prosecution of criminals, in India is a rather dismal. In India a large number of trails end up in acquittals. We have both official and unofficial figures for it. When its official it's about 90% and as far as the unofficial figure is even higher.¹⁰ In India investigation of crime and prosecution of persons having committed the crime are not up to the mark. Even in shocking crimes hefty number of criminals could not be prosecuted and a few percentages of trials end in acquittal as a result of which numbers of criminals as well as crimes are intensifying gradually. These recurring acquittals are mainly because of obsolete procedures of investigation which set out various ambiguities. Thus for actual investigation scientific ways of investigation is very necessary.¹¹ The need for the application of science in the dissemination criminal justice has arisen from the following factors:

4.1Societal Vagaries

The society is undergoing far-reaching changes and that too at a rapid speed. India has under gone a drastic change and has transformed from a imperial colony into a democratic republic. Modern revolution has touches all the means life be it be communication or transportation. But this revolution has not proved positive but it has influenced negative people as well the satellite communication which is helping intelligence agencies on one hand has also proved boon the

¹⁰ Supra note 6, page no. 5.

¹¹ Satyendra. K.Kaul and M.H.Zaidi, *Narco Analysis, Lie Detector, Narco Analysis, Brain Mapping, Hypnosis Tests In Interrogation Of suspects*,(Alia Law Agency, Allahabad, 2008), pg 1.

criminal minds. An American based terrorist group can easily mentor its disciples or followers in India.

4.2 Obscurity

The change in the methods of transportation and shifting of societal paradigm from rural to urban helped and facilitated the criminal to escape from immediate arrest (and punishment) after the commission of crime. The criminal with the help of advanced facilities can hide himself in any corner of the city or can foldaway thousands miles away from the destination where actually he has committed the crime within a shorter duration of time.

The society in present days is not concerned about the facts that what is happening in his neighborhood. Man who was considered as a social animal by Aristotle has now become a self-centered human being. He, especially in cities does not know even his next door neighbor. Thus if the neighbor gets killed the murderers came into lime light only when the bodies putrefy and emit foul smell.

4.3 Technical Know How

The technical knowledge of a common man has increased which has refined the ways of committing crime also and in order to combat with these refined methods of committing crime the method and methodologies of combating the said crime should also get refined and modernized.

4.4 Extensive Arena

The field of operation of the criminal law is widening at a terrific rate. Formally the crime and criminal used to be local and he usually used age old methods for committing the crime but now national as well as international criminal is a common phenomenon. Smuggling Drug Trafficking, financial frauds and forgeries offer a wide and over expanding field.

4.5 Better Evidence:

Normally the physical evidence judged by an expert is quite objective in nature, where if a fingerprint is found at the scene of crime, it is viewed to be only one person. If that person happens to be the suspect, he must account for his presence at the scene. Similarly that if a bullet is recovered from a dead body, it can be attributed to only one firearm. If this firearm happens to be that of the accused, he must be accountable for its involvement in the crime. Such evidence is always verifiable.¹²

V. VARIOUS FIELDS OF FORENSIC SCIENCE

Various fields of forensic science that help in criminal investigation including: Forensic Entomology, Forensic Toxicology, Ballistics, Forensic Chemistry, Forensic odontology, Forensic Anthropology, DNA Profiling, Fingerprinting, Forensic Engineering, Forensic Psychiatry, Document Examination.

¹² Supra note 6, page no. 7

5.1 Forensic Entomology

Forensic entomology is that branch of science that deals with study of insect and other arthropods. It is related to the biology, locations, mutations and their control in relation to world's environment. It is a very extensive field and has a worldwide network of professors, researchers and commercial experts and thereby utilizing the knowledge derived in the fields of agriculture and natural phenomena. Forensic entomology is principally related with death investigations; on the other hand, it may also be used to distinguish, identify various forms of drugs and poisons, define the location of an event, discover the extent of a period of neglect in the elderly or children, and catch the occurrence and time of the infliction of injuries.

5.2 Forensic Toxicology

Toxicology is the study of poisons or it is the science of poisons. According to Walls toxicology can be divided into:

1. Clinical Toxicology: The recognition of the symptoms of poisoning, and the application of proper remedial measures;
2. Chemical Toxicology: the detection of the poison in stomach washings, blood samples, etc.(if the patient or the victim recovers), or in post-mortem material (if he dies).¹³

Toxicology is the learning of the antagonistic effects of elements/compounds on living organisms. Forensic toxicology consists of an inclusive list of various disciplines that help in detection and interpretation of various drugs and different kinds of poisons in the medico legal death investigations which involve scientific technology with legal colour and various human performance issues. In these investigations, the three main objectives are to:

- a) Establish if the toxicants under question are having the capacity of causing death.
- b) Establish if the toxicants which are to be investigated under toxicology can cause behavioral changes.¹⁴

5.3 Forensic Psychiatry

The subject that deals with the study of mental illness, with particular reference to diagnosis and treatment of mental disorders is known as psychiatry and the subject that deals with application of Psychiatry in the administration of justice, is known as Forensic Psychiatry.¹⁵ Within a few decades the label forensic psychology has become more common than it might have been prior to the 1980s. The most precise definition of Forensic Psychology is:

“The study of human behavior in legal settings or relevant legal environment”¹⁶

Forensic pathologist and psychiatrist have lectured upon an extensive collection of legal issue because they work with both civil and criminal cases. In criminal law the key focus is on the matter relating with capability

¹³ Terence. F. Kiely, *Forensic Evidence-Science And Criminal Law* (CRC Press, Washington D.C 2001), Pg101 210 , available at google.books.com

¹⁴ <http://www.forensicsciencesimplified.org/tox/Toxicology.pdf> , visited on 12-02-2017

¹⁵ V.V.Pillay ,*Textbook of Forensic Medicine & Toxicology*(Paras Medical Publisher, 17 edn, 2016), pg100

¹⁶ M.Fanetti, W.O. Donohue, et al, *Forensic Child Psychology; Working In Courts And Clinic*(John wiley and Sons publications, 2015), page no.3

and the assessment of the mental illness etc. Analysis of various reasoning process used to reach the concluding opinion.¹⁷

5.4 Ballistics Forensic

Ballistics is the science of mechanics that deals with the flight, behavior, and effects of projectiles, especially bullets, gravity bombs, rockets, or the like; the science or art of designing and accelerating projectiles so as to achieve a desired performance. In the field of forensic science, forensic ballistics is the science of analyzing firearm usage in crimes.

5.4.1 Gun Ballistics

Gun Ballistics is the study of projectiles from the time of shooting to the time of impact with the target. Gun ballistics is often broken down into the following four categories, which contain detailed information on each category:

- **Internal Ballistics**, (sometimes called interior ballistics) the study of the process originally accelerating the projectile, for example the passage of a bullet through the barrel of a rifle;
- **Transitional ballistics**, (sometimes called intermediate ballistics) the study of the projectile's behavior when it leaves the barrel and the pressure behind the projectile is equalized.
- **External Ballistics**, (sometimes called as exterior ballistics) the study of the passage of the projectile through space or the air; and
- **Terminal Ballistics**, the study of the interaction of a projectile with its target, whether that be flesh (for hunting bullet), steel (for an anti-tank round), or even furnace slag (for an industrial slag disruptor).

5.5 Document Examination

The document division of forensic science is encountered with broad spectrum of problems pertaining to white collar crimes like examination of handwriting and signatures, detection of forgery, detection and decipherment of erased, obliterated writings, decipherment of postal cancellation seals, rubber seals etc. examination of printed matter, type scripts, decipherment of invisible ink, examination of charred documents, determination of sequence (relative age) of two intersecting pen inks.¹⁸

5.6 Forensic Anthropology:

Anthropology is the study of humans and human behavior. Anthropology is a very a very diverse field and is not restricted to one area only but consists of various subdivisions. Mainly this diverse field has three main divisions namely: 1. Forensic Osteology 2. Forensic Archeology 3. Forensic Taphonomy.

Osteology is the study of bones in individual and skeleton as a whole. Archeology involves the controlled assemblage and diggings of human remnants and other evidences from the scene of crime. Taphonomy is the

¹⁷ *Psychiatry behaviour in forensic science*, available at: www.forensicsciencesociety.org.uk/ (visited on date 29-11-2015).

¹⁸ Supra note 15 ,p no.471-472.

study of deviations occurring to the human remains at the time of and after the time of death, comprising of trauma, putrefaction and environmental alterations.¹⁹

Forensic anthropology is the application of the science of anthropology along with it all its sub divisions to a legal setting. Subject of forensic anthropology helps in the identification of deceased individuals whose mortal remains have been decomposed, burned, mutilated or otherwise by somewhat or other are not recognizable as happened in cases of plane crashes. Forensic anthropologists also prove helpful in the investigation and documentation of mass graves and genocides.²⁰

5.7 Forensic Odontology

Forensic Odontology is defined as that branch of forensic science when dental Expertise is applied to the legal systems. The word Forensic Dentistry is sometimes synonymously used for word Forensic Odontology. Forensic Odontology may also be defined as the scrutinisation, estimation and proper handling of the evidence which are presented before the court of law for the interest of justice. An odontologist or simply a Forensic dentist examines the teeth and prostheses and thereby provides the information about the cause of death. This type of examination is usually carried out for victims of disaster and homicide. Whenever there are mass disasters or wherever some things like bite marks, or age is to be estimated the said branch of forensic science proves a good help.

5.8 Forensic Chemistry:

The chemistry department is typically the major sole unit in a forensic laboratory (followed by the biologist). The kind of materials picked up are paint and glass- often resulting from vehicle crashes or hit- and- run accidents The chemist is also having the in authority for the examination and matching of impression, such as tyre and shoe-print and tool marks left at the scene of a crime customarily during the process of illegal entry.²¹

5.9 DNA Profiling:

DNA Typing (previously referred to as “DNA fingerprinting” or “Geneting Typing” is probably one of the most important advances in the field of forensic science in the recent years.²² DNA Proofing has become a well-known technique used in criminal and other legal cases due to the massive publicity generated by high profile cases, TV crime shows, and films.²³

DNA typing has the following applications:

- Establishment of paternity and maternity
- Establishment of biological relationship for immigration purpose, kidney transport etc.
- Detection of cases of child swapping
- Identification of rapist in rape cases including gang rape cases

¹⁹ Stephen P. Nawrochi, *An outline of Forensic Science* available at archlab.uindy.edu visited on 25-2-2017.

²⁰ Forensic Anthropology available at en.m.wikipedia.org visited on 25-2-2017.

²¹ Brian Lane, *the Encyclopedia of Forensic Science 5* (BCA Publication, London)

²² Supra note 16, pg no.441.

²³ J. M. Tauplin, *Introduction to Forensic DNA Evidence For Criminal Justice Professionals* (CRC Press, 2014), page no.13.

- Identification of mutilated remains as in case of bomb blasts, murder, mass disasters.
- Wild life identification
- Detection of bacteria and other organisms that may pollute air, water, soil, and food
- Authentication of consumables such as wine.

5.10 Fingerprinting or Dactylography:

Dactylography or Fingerprinting system suggested by Galton was based on the accounts of Henry Faulds and Sir William Hershel in Nature(1880), who claimed that the method was individualistic and same throughout the life. Galton classified fingerprints into three types: (1) Arches (2) Loops (3) Whorls

But he was unable to sub-classify them which was very much essential to deal with 2500 persons. Edward Henry is credited with a simple classification system which is satisfactory and successful, and is still in vogue since 1900.

Dactylography or the fingerprint system is based on the study of epidermal ridges and their configurations in the palms of the hand. This method can also be extended to soles of the feet. Finger prints collected from crime scene, or on items present at crime scene, can be used in identifying suspects, victims, and other persons who touched the surface.²⁴

VI. RELEVANCE OF FORENSIC SCIENCE IN CRIMINAL INVESTIGATIONS: AN APPRAISAL

When it comes to level of investigation no matter what will be the level of severity of the case nothing can prove more beneficial to the crime investigator than the use and implementation of the principles of forensic science. The results of those forensic investigations can mark the difference between the acquittal and conviction in the court of law.

Forensic science has come up in a big way to assist criminal investigation. It helps to interrogate suspect, victim and even witness to get the truth. Neurological tests viz. hypnosis, psychological detection of deception (Lie detection), Narco-analysis and Brain mapping has revolutionized the police investigation saving time money and effort and providing far superior results. These scientific methods of interrogation has made the interrogations more humane and legal, thereby eliminating notorious third degree methods of: which most often prove disastrous.

Criminal investigation is a pragmatic science that comprises the study of facts, used to categorize, uncover and demonstrate the culpability of an accused criminal. A comprehensive criminal investigation can include probing, consultations, cross-examinations, evidence collection, preservation and various methods of investigation.²⁵

Criminal investigation is an antediluvian science (pre-historic) that may have origins as far back as 1700 BC in the writings of the Code of Hammurabi. In the code it is advocated that both the accuser and accused had the

²⁴ Supra note 16, p 92 , 448 .

²⁵ Charles E. O'Hara and Gregory L. O'Hara, *Fundamentals of Criminal Investigation* (Sixth Edition, 1994), page 132.

right to present evidence they collected.²⁶ In the modern era, criminal investigations are most often done by government police forces. Private investigators are also commonly hired to complete or assist in criminal investigations. Criminal investigation is simply a part of criminal justice system. It is been seen that very organized and cultural society of the world has evolved and developed a system of justice to prevent breach of law, to enforce laws, to handle law breakers and to assuage the victims so that the society and the country can function smoothly and that its members can live their life happily and work in a colorful, blissful and harmonious nature. The main aim of efficient criminal justice system is to enforce the standards of conduct necessary to protect individuals.

Forensic science facilitates criminal investigation in all varied facets and plays the pivotal role in keeping law and order in a society. It has become an indispensable part of criminal investigations and two will never separate.

Crime is as old as human being himself. Crime, the word crime is not new to human civilization and came into existence from the time when Adam was established. The Quran and Bible provides evidence that the first crime on the planet done by son of Adam himself so it can be said that crime in one form or other existed in the world from times immemorial and so existed the ways to combat them. With the advent of science and technology every aspect of human life has changed and the court and its judicature is no exception to his general rule.²⁷ Nations all over the world have resorted to a liberal approach towards the acceptance of the scientific techniques and the importance of these techniques in criminal investigation can be gathered from the fact that it does not need further justification. This scientific investigation helps in developing a link between the past and present of the crime what known as *Corpus Delecti* or *the body of the offence*²⁸

In 1983, Lynda Mann, age 15, was raped and murdered near the village of the Ender by. This case was not solved. Three years later, another 15-year-old, Dawn Ashworth, was a victim in similar offense. Comparing the DNA “fingerprints” derived from the semen recovered from both victims’ bodies, the investigators realized that the same man had raped and killed both women. A 17-year-old man was initially arrested and sample of his blood was subjected to the DNA analysis. This man’s innocence, however, was clearly established by the lack of DNA match, and was released. Subsequently, all the males in the Ender by area between 13 and 30 years of age were asked by the police to voluntarily provide the blood samples for DNA typing.

During 1986 a series of the rapes and assaults occurred in Orlando, Florida, that resulted in the first use of the DNA in the criminal investigation cases in this country. The crimes shared a common pattern: the attacks occurred after the midnight, in the victims’ homes, by knife-wielding perpetrator. The perpetrator was quick to cover the eyes of the victims with a sheet or blanket, so none of them could give the detailed descriptions of their assailant. During early 1987, the investigators were staking out a neighbourhood in which it was believed

²⁶Ann Wolbert Burgess, Albert R. Roberts, Cheryl et al, *Learning: Victimology : Theories and Applications* 2009, page 103.

²⁷ Supra note 9,p 180.

²⁸ Manoj .H. Parekh and S.P. Singh Parmar ,*Crime Investigation and Medical Science*,(Allahabad Deviwed Company),2008 p.6

that the rapist might strike saw a blue 1979 Ford speeding out of the area. They followed the car for a short distance before it crashed into a utility pole while making a turn.

In *Bazari Hajam v King Emperor*²⁹ the question arose whether it would be safe to act on the uncorroborated testimony of the fingerprints and declare the guilt of the accused. On this point Bucknill, J, observed thus: "I think that apart from the fact that I should be rather sorry without any corroborative circumstances to convict a person of a serious crime solely and entirely upon similarity of the thumb marks or finger prints, the very fact of the taking of a thumb-impression from an accused person for the purpose of the possible manufacture of the evidence by which he could be incriminated is in itself sufficient to warrant one in setting aside the conviction upon the understanding and assumption that such was not really a fair trial as well."

This view was disapproved of by Schwabe, C J in *Public Prosecutor v Kandasami Thevan*³⁰ although the point did not directly arise in the case as there were the thumb-impressions of the accused in the evidence other than that taken by the judge in court for the comparison with the thumb-impressions in the document alleged to have been forged.

Rejecting the contention that the study of the footprints is not a science in *Din Muhammad v Emperor, Central Provinces Police Gazette*³¹, the court of the Judicial Commissioner at Nagpur (H J Stanyon and H F Hallifax, A J Cs) as far back as in 1914 held: "The knowledge of the footprints has similarly been systematized and pursued by the trackers, mainly uncivilized and ignorant people an all the other respects, all over the world. The matter is therefore undoubtedly a science and opinion of a person especially skilled in it is a relevant fact, under Sec-45 of the Evidence Act". In the case of *Pritam Singh v State of Punjab*³² there is an observation to the effect that the science of identification by the footprints is a rudimentary science and much reliance cannot be placed on the result of such identification.

In *Harpal Singh vs State Of H.P.*,³³ the fact in issue was about the age of the girl, the age of the girl was ascertained by scientific techniques the same result obtained by that of the medical tests was then corroborated with those of the records of the school which was certified by that of the headmaster and also by the entry in the birth register.

The case which brought DNA controversy to the forefront in the Indian Legal System was rape and murder of Priyadarshani Matoo.³⁴ At trail stage, this case relied upon the DNA tests of vaginal swabs of the deceased, which later came to be positive and made ends of justice meet.

²⁹ AIR 1922 Pat.73:23 Cr. L.J 638.

³⁰ AIR 1927 Mad. 696: 27 Cr. L. J 1251.

³¹ Dated 27th May, 1914 pp. 125-130.

³² AIR 1956 S.C. 415.

³³ (1999) 8 ,SLC 679.

³⁴ CBI vs Santosh Singh FIR no.50/96 courts of additional Session Judge, New Delhi.

The same technology of DNA testing has also helped to prove that the former minister Rajendra Mushahary belonging to Asom Gana Parishad had raped a woman twice and due to which such lady became pregnant thus he was held to be the father of the woman's child.³⁵ This technology of DNA Testing proved beneficial in bringing the murderer of Rajiv Ghandhi,³⁶ Dhannu,³⁷ to meet her fate by testing her mutilated body. Similarly the terrorist attack that happened on WTO building 9/11 in New York bodies of victims were identified by scientific technology of DNA testing.

Tandoor Murder Case (1995) Delhi,³⁸ this was the first criminal case in India solved by the help of forensics. In this case Shusil Sharma murdered his wife by firing bullets in to her body because of the misunderstanding that she had illicit relationship with her classmate and fellow congress worker Matloob Karim. After committing the sinful act he took her body in his car to the Bagiya restaurant, where he along with the manager of restaurant Keshav Kumar attempted to burn her in a *tandoor* there. Police recovered Sharma's revolver and blood-stained clothes and sent them to Lodhi Road forensic laboratory. They also took blood sample of Sahni's parents, Harbhajan Singh and Jaswant Kaur and sent them to Hyderabad for a DNA test. Lab reports Confirmed that the body was that of wife of shusil sharma, the DNA report said, "The tests prove beyond any reasonable doubt that the charred body is that of NainaSahni who is the biological offspring of Mr. Harbhajan Singh and Jaswant Kaur." And finally Mr. Shusil Sharma was found guilty with the help of forensic evidences.

Sister Abhaya murder case (1995) Kerala³⁹ The Sister Abhaya Case is a case regarding the death of a Knanaya Roman Catholicnun, who was found dead in a water well in St Pius X convent in Kottayam, India, on 27 March 1992. During the investigation of this case various scientific techniques like Narco-analysis, Brain Mapping, Polygraphic tests were used to solve this case and finally two priests were held liable for the rape and murder of sister Abhaya

AarushiTalwar murder case (2013) Noida⁴⁰ AarushiTalwar, the 14-year-old daughter of a successful dentist couple, was found dead with her throat slit in her parents home at JalvayuVihar in Noida, a posh suburb of Delhi. Suspicion immediately fell on the family's live-in man-servant, Yam Prasad Banjade alias Hemraj, a 45 year old Nepalese national, who was found missing from the home. But later on after the investigations were complete it was seen that the murder was committed by her own parents and declared as a case of honour killing.

VII.CONCLUSION

The analysis of the aforesaid presentation amply reveals that forensic science is an advantage in conveyance of justice without any delay. Forensic science is a evidenced procedure which comprises several branches of

³⁵Pranam Kumar Rout, *DNA Test A Forensic Boon*, *Criminal Law Journal*, 2003, pg 349.

³⁶ State of Tamil Nadu vs. Nalini &ors; 1996(6) , SCC, pg. 241.

³⁷ Real name is Thenmozhi Rajaratnam

³⁸Sushilsharma Vs State of Delhi (2014) 4 , SCC, 317.

³⁹ In Re: Sr. Abaya Vs unknown.

⁴⁰Dr Rajesh Talwar & anr vs. CBI: 2013(82) ACC 303.

science. It consists of forward-thinking and contemporary medical technology. Forensics requires an expert who can collect biological samples paying essential precautions while their collection, like proper handling, proper storage of biological samples like blood, semen, saliva, hair etc. forensic science can donate a lot for getting immediate justice to the contemporary society if the above said measure are taken care for due and effective implementation. The eminence reports from the forensic scientists shall undoubtedly fulfill the hope of the society from the forensic professionals. At present time because of the fact that criminals are embracing new modern sophisticated techniques in committing the crimes, so, it is not possible to solve the crime without applying the new scientific technique. Therefore the importance of forensic science is fast increasing in the Present time with the help of forensic science and its new techniques the mystery crime can be easily solved. The scope of forensic science is ever-increasing with passing of the time. There are various branches of forensic science which are really very helpful in detection and in solving the crime and in finding out the criminal. Forensic science still needs some technological advancement. It also requires experts in criminal cases, who can collect evidences safely. Unlike the practice in USA and England and other developing countries, DNA Technology has a very little application in the Indian Legal System. The admissibility of the DNA evidence before the Court always depends upon its accurate and proper collection, preservation and documentation by which the prosecution can be able to satisfy the court the unbroken chain of custody of the physical sample from the time of seizure to the time of analysis.⁴¹

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