CHAPTER- V

CONCLUSION AND SUGGESTIONS

Crime is taking place right from the beginning of the civilization. The germ of criminal jurisprudence came into existence in India at the time of Manu. In all societies some norms, customs, traditions and culture are utilized by the people. If any of the custom or tradition is violated by any person of a society that is declared against the society norms. It is easy to say that any act against the society norms is a crime that could be defined as anti-social, immoral or sinful behaviour. Crime is an intentional act or omission in violation of criminal law committed without any defence or justification and penalized by the law as felony or misdemeanor.

The prime duty of the State is to protect the life and property of every citizen and to provide the peaceful environment. It is an important and valuable duty of the police to bring those who break the law before the Criminal Justice System. The criminal law and criminal investigations, like every other aspects of society, are subject to the forces of social organization. Change is the primary characteristic of the society in which we live. Much more changes are to be noted in man’s way of life in this century than in all the history of man before it. And those who survive the coming decade will in all likelihood see even further changes.

In the present age, hi-tech crimes are committed by the offenders. Every offender or law breaker is aware and is known of various aspects of investigation through internet, newspapers,
news channels and TV programs on crimes and tries to disguise his identity by wearing gloves in hands, monkey cap on face and by covering himself with the blanket while committing crimes. The crime scene can be a rich source of physical evidence. A scene of occurrence of a crime is the place where a particular crime has been committed or where physical evidence of such crime is found when it is first brought to the notice of the police. It is a starting point for the investigator, which provides him with the information on the victim and the suspect and to reconstruct the crime. The scene of occurrence cannot be limited to one place only. It may extend to one or more places. It may also not be limited to immediate surroundings, but may extend to a wider area depending upon the nature of the crime committed. The scene of crime may be classified as outdoor or indoor scene. A crime committed on a road or a field is an outdoor crime, whereas a crime is committed in a house, a car, etc., is an indoor crime.

Scientific aid is an important tool to assist the criminal justice delivery system. Scientific aids to investigation provide general as well as specific technical information on different aids for the detection and investigation of crime. There are numerous occasions when evidence recovered from crime scene is forwarded to laboratories for scientific examination. There are a number of scientific aids which are utilized by the police or forensic scene of crime team experts in criminal investigation.

It is almost impossible for a person to commit a crime without leaving some kind of evidence of the act. The evidences may be of testimony, documentary, demonstrative and physical. Physical evidence is the most important evidence which is
tangible objects, such as blood, hair, fingerprints etc. Physical evidence is the basis for scientific crime investigation. It can establish that a crime has been committed or can provide a link between a crime and its victim or a crime and its perpetrator. It can also provide leads to the investigator during the conduct of investigation of a criminal offence. Moreover, scientific criminal investigation involves the use of science to identity and link the culprit with the crime, the victim, the scene, the weapon of offence and other evidence *inter se*, decisively. Science has progressed much, in recent years that it has crossed all physical barriers as far as the analytical techniques are concerned. If the collection, preservation, authenticity and integrity of the evidence is proper and beyond doubt, the evidence it provides is sure and certain.

Physical evidence is evidence having a physical or material quality - a tangible article, no matter whether microscopic or macroscopic. It encompasses any and all objects, living or inanimate, solid, liquid or gas. Physical evidences are the basis of scientific crime investigation. It is encountered in almost all the crime cases and it is up to the investigating officer to locate, collect and send them to the forensic science laboratory for examination. As far as evidentiary value is concerned, physical evidence is more acceptable when compared to human testimony. With the passage of time the witnesses change their stand whereas physical evidence does not. Physical evidence can take any form. It can be as large as a residence or as small as a fibre, as fleeting as an odour or as obvious as the scene of an explosion. Indeed, the variety of physical evidence that may be encountered by a police officer is enormous.
Physical evidence must be handled carefully to prevent its contamination, alteration, or destruction. The composition of physical evidence may be altered by natural course (e.g., rain and wind), by accident, by negligence, by intentional act, or by theft. Although special precautions must occasionally be taken, the use of reasonable care and common sense in handling evidence will normally suffice.

The term ‘Forensic’ is derived from the Latin word ‘Forensis’ which means belonging to courts of justice or to public discussion and debate. In this way, ‘Forensic Science’ means the science which is used in the courts of justice. Forensic Science in its broadest definition means application of science to law. Forensic Science covers almost all the basic sciences and their application to wide sphere of physical evidence materials. Most of the Central or State Forensic Science Laboratories have Ballistic Division, Biology Division, Chemistry Division, Document Division, DNA Division, Fingerprinting Division, Forensic Psychology, Explosive Division, Instrumentation Division, Lie-Detection Division, NDPS or Narcotics Division, Photo section or Photography Division, Prohibition and Excise Division, Physics Division, Serology Division, Toxicology Division and Voice Analysis Division etc.

Generally the organization of police is made for the security of the public and maintenance of peace in the State. The Father of Nation, Mahatma Gandhi once said that his concept of Police is entirely different from that of the present day police. They would be servants of the people rather than their ‘Swami’. People will themselves help them in all possible ways. With continued co-operation, they will be able to control riots, etc.
They would need ‘police behaviour’ only with thieves and dacoits.

A police officer in the rank of sub-inspector or above the rank of sub-inspector can do the investigation of any offence. Any head constable also who is lower school course pass or above the rank of head constable can do the investigation of any case of non-heinous offences on the behalf of Station House Officer/SHO. The power and duty of police can be understood only after a study of the Criminal Procedure Code, 1973 in detail. This Code is called ‘The Police and Magisterial Code’. It provides the powers to a police officer. Police officers, superior in rank to an officer in charge of a police station may exercise the same powers throughout the local area to which they are appointed, as may be exercised by such officer within the limits of his station.

The criminal justice system has learnt to rely heavily on the analysis of physical evidence as scientific procedures and methods have become increasingly more reliable and convincing than eyewitness testimony. The influence of television programs showing the use of highly sophisticated analytical equipment to solve crimes has made the juries to come to expect complex scientific evidence to be presented in all criminal cases. Now-a-days TV channels, like Sony, Life OK and Colors are showing the crimes occurred in the past. Sony TV shows CID, Life OK Savdhaan India and Colors Code Red. The real story makes the viewers much more aware about the crime techniques; on the other hand criminals are learning how to commit the crime intelligently.

Scientific aids in police investigation as the name indicates, is the application of science in police investigation or
criminal investigation. A forensic scientist examines physical evidence for one of two purposes: identification or comparison. Identification is the process of elucidating the physical or chemical identity of a substance with as much certainty as possible. Comparison is the process of subjecting both the evidence (questioned sample) and the reference material (exemplar) to the same tests to prove whether they share a common origin.

**DNA as a Scientific Aid in Police Investigation**

DNA is an abbreviated form of Deoxyribo Nucleic Acid. It is a basic genetic material present in all nucleated cells of the body, and provides the genetic blueprint of all life; meaning thereby, it stores all hereditary characters of an individual which he inherits from his parents. DNA is a linear double stranded chain of molecules which has a helical structure, almost resembling a twisted ladder with sides made of rope. Each DNA molecule consists of sugar (S) and phosphate (P) which alternate together to support the rungs of the ladder. Whereas, four bases namely adenine (A), thymine (T), guanine (G) and cytosine (C) join to form the rungs of the ladder.

Deoxyribonucleic acid (DNA) is a molecule that carries most of the genetic instructions used in the development, functioning and reproduction of all known living organisms and many viruses. DNA is a nucleic acid; alongside proteins and carbohydrates, nucleic acids compose the three major macromolecules essential for all known forms of life. Most DNA molecules consist of two biopolymer strands coiled around each other to form a double helix. The two DNA strands are known as polynucleotide since they are composed of simpler units called nucleotides.
DNA analysis examines DNA found in physical evidence such as blood, hair, and semen, and determines whether it can be matched to DNA taken from specific individuals. DNA was first identified and isolated by Friedrich Miescher and the double helix structure of DNA was first discovered by James Watson and Francis Crick. In 1869, Swiss Physician Friedrich Miescher discovered a microscopic substance in the 'pus' of discarded surgical bandages. As it resides in the nuclei of cell, he called it "nuclein". In 1878, Albrecht Kossel isolated the non-protein component of nuclein, nucleic acid, and later isolated its five primary nucleobases. In 1919, Phoebus Levene identified the base, sugar and phosphate nucleotide unit. In 1937, William Astbury produced the first X-ray diffraction patterns that showed that DNA had a regular structure. In 1953, James Watson and Francis Crick suggested what is now accepted as the first correct double-helix model of DNA structure in the journal nature. The DNA in all of the cells of a single individual is the same throughout the entire body because humans evolve from a single fertilized egg- that is, a single source of DNA. In 1983, Jeffreys found that DNA contained repeated sequences of genetic code within "mini-satellites", these mini-satellites in turn, contained core sequences that all unique to particular individuals. Jeffreys's discovery was a crucial element in the development of the technology now known as DNA fingerprinting.

Perhaps the most potentially important discovery in the recent scientific history of forensics has been the development of DNA profiling. In India, at the centre for cellular and Molecular Biology, Hyderabad and also in other countries extensive research is being done in the scientific technology relating to Deoxy Ribo Neucleic Acid Test (DNA). India is the fourth nation
to develop this technique independently without drawing assistance and has employed it in a case of murder committed in Bangalore where the scientists were asked to establish the identity from highly mutilated pieces of human remains. There are a number of assassination cases which have been solved through DNA fingerprinting in India e.g. Rajiv Gandhi, former Prime Minister of India and Sardar Beant Singh, Chief Minister of Punjab and so on.

DNA is the most important and reliable scientific evidentiary clue in the courts of law. Now the question is how and where can we ascertain the DNA? In simple words, what are the sources of DNA? In short, we can ascertain the DNA from blood, body fluids, flesh, hair root, long bone/ bones, nails, saliva, semen, skin, teeth, and tissue etc.

Among the various types of physical evidences met with in different crimes some could be in the form of DNA. DNA is a forensic tool in crime investigation. It is a technique which helps in establishing the identity of biological evidence material which can be conclusively used by the investigative agency or the courts in solving the case.-crimes etc. It helps in deciding the fact whether a person is guilty or innocent or otherwise.

DNA analysis has become a common form of evidence in criminal trials as well as civil suits. DNA test can be ascertained in many types of samples, they are; blood, semen, tissue, long bone, hair root, saliva, body fluid and teeth. The utility of DNA test is in the investigation of the following matters- disputed maternity or paternity, baby swapping, missing identity, murder, rape cases, immigration cases, road accidents. DNA is a forensic tool in crime investigation. DNA and RNA are responsible for the storage and transmission of genetic information in all living
organism. They hold the key to the manner how genetic information is transferred from one cell to another and how genetic traits are transmitted, via sperm and eggs from parents to offspring. The major function of DNA and one in which RNA is also involved- is the control and direction of protein synthesis in body cells. Chemical information stored in the DNA of genes specifies the exact nature of the protein to be made and, therefore, dictates the character of the organism. The importance and utility of DNA can be established in the investigations of:

1. Disputed paternity/maternity
2. Baby Swapping
3. Missing identity
4. Murder
5. Rape cases
6. Immigration cases
7. Road accidents, abduction (kidnapping etc.)

Forensic examination of DNA is performed in varying biological samples. Specialized equipments and software are used for doing the analysis and the results are stored in DNA database files. Such files are generally maintained in Windows system or Macintosh system utilizing the relevant software application.

In India, a number of cases have been solved with the help of DNA fingerprinting, including paternity disputes. Even Dhanu and Sivarasan, alleged assassins of the late Prime Minister Mr. Rajiv Gandhi, were identified by DNA profiles.

DNA fingerprinting gained legal validity in India in 1989 in a paternity case in Thalassery, Kerala. Kunhiraman went back on his promise of marrying Vilashini when she became pregnant. Vilashini subsequently gave birth to a son, Manoj. When she
applied for child maintenance, Kunhiraman denied that he was the father. Using DNA profiling, it was established that Manoj was indeed Kunhiraman’s son. Another kinship (blood relation case) case was of Lakshmi in the Madras High Court. A quarry worker, Pandian, and his wife filed a First Information Report in 1988, saying their missing daughter had been seen in the custody of an itinerant street juggler, Perumal. Both claimed paternity. DNA profiling proved that Perumal was the father.

The introduction of DNA fingerprinting helps in solving crimes, where the question of maintenance arises in cases of illegitimate children, and then it becomes necessary to determine who is the biological father or mother of the child. It is the only one scientific technique that is called Deoxyribonucleic acid (DNA) profiling, DNA fingerprinting. Due to demand of time, the foremost suggestion in this context is to make the enhanced scientific research in holding the DNA test through the ashes and bones of burnt dead bodies after cremation.

**Fingerprinting as a scientific aids in police investigation**

A fingerprint is an impression, it includes the ten fingers tips and palm of hands and feet's impression also. It is well known that the surface of our palms, finger tips and the soles of our feet are covered with a skin that is different from any other part of our body skin. Hair does not grow on these parts e.g. palms, fingers and soles of feet. The raised part or lines are called ridges. These ridges are found on the opposite side of the nails of fingers either hand or feet. Moreover, these ridges are also found on the palm and soles of feet.

Personal identification by fingerprints, adopted in every civilized country in the world, first took its origin in India by Sir William Herschel, when he was Collector of Hoogly in 1858. He
introduced fingerprinting out of necessity to prevent personal misrepresentation because to him all Indians looked alike. Sir William Herschel was British administrator in Bengal. He started the practice of recording handprints of natives on contract that modern fingerprint science came into existence. His concept was that fingerprint could be successfully used to prevent impersonation among natives and to induce superstitious belief that the prints were a kind of mystic symbol. He however, did not publish any of his findings.

In 1924, The Federal Bureau of Investigation (FBI) took over the cataloguing of fingerprints in America. By 1971 they had over 200 million fingerprints on file. Further, with the advancement in technology, programs began using Automated Fingerprint Identification Systems (AFIS). The AFIS’s scanned and stored fingerprints electronically in the year of 1990. Law enforcement groups saw the need to fingerprinting children as a means of identifying kids who got lost, or went missing; Christ Migliaro founded Fingerprint America for this purpose. In the year of 1999 FBI started moving their fingerprint file to an electronic system. Millions of criminal fingerprints are now stored across the globe.

Expert evidence must be viewed not as a piece of substantive evidence of a conclusive nature, but as a piece of corroborative (tending to confirm) evidence to other evidence in the case. The expert evidence is weighed in the same way as other evidence. The court is not bound to accept the opinion of an expert automatically, but the ground on which he gives his opinion would carry value to the evidence. As to the probative value of the opinion of an expert on fingerprints, it must have the same value as the opinion of any other expert, such as a
medical officer, etc. In each case the evidence is only a guide to
the court to direct its attention to judge of its value.

The classification of fingerprints is of four types, they are as under:-

1. Primary Classification;
2. Secondary classification;
3. Sub-secondary classification; and
4. Final Classification.

Fingerprints, through the influence of movies, television,
and detective fiction, are the form of physical evidence which the
public has become most familiar. This general familiarity with
the subject tends to lend a greater importance to fingerprints in
the mind of the public than they actually have in criminal
investigation. Many people think they leave a fingerprint every
time they touch something. This is far from the truth. The
chances of leaving a readable print depends on the surface of the
item that is touched, the conditions of the fingers, and the way
one handles the item.

The science of fingerprints identification is an exact
science and the opinion of the fingerprint expert is acceptable
under section 45 of Indian Evidence Act, 1872. The Central
fingerprint Bureau has earned many achievements in solving a
number of cases. The following conclusion and findings can be
drawn regarding fingerprints as scientific aid to investigation.

First, there is lack of computerization and equipments. The
status of Computerization and availability of fingerprint
equipment are not available in many fingerprint bureaus in
India. For example, Bihar, Chandigarh, Dadar & Nagar Haveli,
Daman & Diu, Himachal Pradesh, Jharkhand, Lakshdweep,
Manipur and Uttar Pradesh are such states where computer
technique was not installed till 31.12.2014 (as mentioned in the National Crime Record Bureau). And there are some states where there technology is installed, but there is no proper functioning of them because either it is too old or it is out of order.

Secondly, poor results regarding tracing of cases are a big handicap. It is also notable that most of the bureaus have not solved any fingerprint case during the last three years. For example, in the bureaus of Bihar, Chandigarh, Chhattisgarh, Dadar & Nagar Haveli, Daman & Diu, Goa, Jammu & Kashmir, Lakshdweep, Manipur, Nagaland, Rajasthan, Tripura, Uttarakhand, and West Bengal no chance prints have been traced and tallied during the last three years, i.e. 2012, 2013 & 2014. It is, therefore, well established that this technique is not fully utilized throughout the country.

Thirdly, fingerprint cases are difficult to be proved in the court. To an ordinary man it is a very difficult task to prove the science or scientific aids in the courts of law regarding crime and criminal activities. As only a Fingerprint Expert can satisfy the court in respect of chance print found from the spot. Expert evidence is nearly always a weak type of evidence, especially in the case of one who has not sufficient knowledge on the subject.

Fourthly, confusing data between core and delta is a big problem. There is a great confusion about the point falls between core and delta. Moreover, many courts admit 8 points or 6 points or even 3 points for verification.

Fifthly, impressions made on cloth are worthless clues for examination. In very simple words, fingerprints made on cloth pieces cannot be developed and lifted or photographed.

Sixthly, impressions on unpolished wood, tumbler glass and walls are also worthless clues for examination.
Seventhly, there is dearth of trained staff. Proper training is not provided to the officials engaged in the work of lifting, packing and forwarding the chance prints from the crime scene. Due to lack of proper training and insufficient staff important crime scenes are not properly examined by the technicians posted in such works. Further, latest techniques and cameras are not provided to the personnel engaged in such works.

Eighthly, proper facilities to the officials engaged in scientific work are not provided. There are no proper conveyance, accommodation and other necessary facilities to the personnel employed for such work that makes them lazy as they use to up down from the work place etc.

Lastly, there are no special incentives, special salary or allowances admissible to the officials engaged on such duty.

Of course, the fingerprint is an exact science. A number of cases have been traced with the help of this scientific aid. No two fingerprints match with each other not even in the whole universe but also of a single person or twins. A man can disguise himself but a chance print or fingerprint reveals his true identity. As there are very poor performance in respect of fingerprint tracing system in many bureaus in our country, so it is the demand of time that important changes and developments are needed in developing this technique so that this scientific aid can prove useful in solving the criminal cases. There is a much need for research in this topic.

There are a number of steps which should be taken for the development and progress of DNA and fingerprints as scientific aids to investigation. Thus, my humble suggestions can be discussed under the following heads for further research in this field.
Enhance scientific research is required in DNA fingerprinting. No doubt, the introduction of DNA fingerprinting helps solving crimes. Where the question of maintenance arises in cases of illegitimate children, then it becomes necessary to determine who is the biological father or mother of the child. It is the only one scientific technique that is called Deoxyribonucleic acid (DNA) profiling, DNA fingerprinting. Due to demand of time the foremost suggestion in this context is to enhance the pace of scientific research in holding the DNA test through the ashes and bones of burnt dead bodies after cremation as existence of such disputed cases.

There should be rigid and uniform standardization of training. Where a person claims to be an expert but there is no evidence about the nature of training received by him and his qualifications, and there is no data from which he arrived at his conclusion, the evidence given by him is neither legal nor sufficient. Half-baked knowledge is a dangerous thing. This proverb suits them who are not fully trained in their profession or job. Half baked trained officials posted in such important jobs cannot give brilliant results. Therefore, a proper training program should be managed and employees should be trained from time to time so that they can learn about the new techniques and methods useful in the present time. In the field of fingerprinting new technology is being utilized. The knowledge and proper training should be given to the fingerprint experts time to time.
(iii) Vacant posts should be filled with qualified personnel. As discussed earlier that there are a number of vacant posts in the various bureaus all over India. Such posts should be filled up so that the work of those bureaus does not suffer. Lack of manpower creates many problems.

(iv) Promotion to research work is another requirement for a well-oiled scientific investigation. It is work that makes a workman. In other words, practice makes a man perfect. The expert’s opinion does not take away the common man’s judgment. They have the right to think and judge things from day-to-day experience. The work of scientific aid requires more and more research work. Therefore, scientific staff should be encouraged that they do the research work in their fields. Research no doubt develops new techniques that can meet the challenging problems in the age of science. Scientific staff should be encouraged to participate in research work.

(v) Latest modern equipments should be made available to the investigating and scientific staff. As a soldier cannot fight without arms in the same way a fingerprint expert cannot do his work without the equipments and fingerprint kit etc. Equipments and other necessary items, such as new cameras for fingerprinting purpose, laser lights and other needed for the expert should be timely provided. High quality powders and brushes should be easily available to the units.

(vi) Inter-connection of the various bureaus shall strengthen the scientific investigation. All the bureaus should be
inter-connected for the comparison purpose. The data collected in all bureaus should be made accessible. Convictions of the accused with their fingerprint slips should be displayed in all bureaus at national level.

(vii) Accommodation and mobilization facilities to the scientific team experts must be property provided to the science team. It is very important point that the scientific team experts should be provided with the accommodation and mobilization facility so that they can reach the crime scene well in time and operate the essential work at their office.

(viii) Opportunity of training in developed countries and allotment of fixed duty hours may be provided as lucrative incentives to the field officers.

(ix) Co-operation between the other bureaus shall facilitate the scientific investigation. Facility of mobilization is faster than the old times. A man can reach anywhere in short period. Criminals from the different states come to another states and do the crimes and ran away due to availability of conveyance and vehicles. It becomes necessary that co-operation between the all bureaus should be settled.

(x) Fingerprints recording at the birth of a baby should be made a compulsory feature. In many countries fingerprints of all citizens are recorded at the time of his birth. Moreover, those countries technology is of high standard. They can trace the criminal cases in short period. In India, it is very difficult task to use the scientific aids very soon due to non availability of equipments, technology and staff etc. It is suggested
that fingerprints of all citizens should be taken at the time of his birth.

(xi) Aadhar Card for every citizen should be made compulsory. Aadhaar cards are also called Unique Identification Numbers to residents in India. This project was started to give every individual citizen a single and unique identification document or number that would include all the information about that individual even his demographic and biometric information. Total 96, 22, 94,590 AADHAAR cards have been issued till 17th January, 2016. Total population of India on 17th January, 2016 is 127, 42, 39,769 and growing. AADHAAR cards for every citizen should be compulsory so that the data of fingerprints of all citizens can be collected. This can help the police to find out the culprits in seconds.