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EVIDENTIARY VALUE OF FIREARM

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I. ABSTRACT

Firearms are integral to criminal investigations globally as ballistic analysis, residue tests and gun registration provide vital evidence. Forensic firearms examination involves studying firearm and bullet characteristics to establish links between individuals, weapons or crime scenes. Firearms serve as evidence in various crime scenes and help identify suspects, establish connections between crimes, and expose illicit networks. To recover fingerprints and restore serial numbers, forensic examination of firearms is conducted. Hidden prints can be revealed through super glue fuming while magnetic particle inspection together with chemical restoration can also bring back destroyed serial numbers. Serial number recovery is very important in tracing the history and ownership of a gun. Bullet examination investigates such class characteristics as surface attributes, diameter and rifling twist in order to aid identification of potential weapons. Individual characteristics are established through comparing known and questioned specimens using a comparison microscope. Firearms registration and ownership records assist law enforcement by holding these owners accountable for their guns and tracking their movements. However, there are challenges to this type of evidence which include use of illegal guns, modifications that erase off serial numbers; controversies with ballistics analysis etc. This therefore implies that addressing these challenges will require constant research into forensic techniques aimed at improving them.

II. KEYWORDS:

Firearms, Crime Investigations, Ballistics Analysis, Forensic Firearms Examination, Fingerprints, Evidentiary Value, Bullets, Firearm Registration, Serial Number etc.

III. INTRODUCTION

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Firearms have been pivotal in the crime process and subsequent investigations. These implements were initially made for self-defense and game hunting. It has become key evidence in many criminal cases around the world. The importance of a firearm to a police investigator is beyond its physical appearance at the scene of crime, this includes ballistics analysis, firearm residue testing, firearm registration and interpretation of firearms related evidences. Primitive rifles to modern semi-automatic pistols have had a lasting impact on human history. In addition to being tools used for protection or destruction, these weapons are sometimes employed in the commission of crimes. Firearms are generally an important piece of evidence in crime investigation and trial as they determine success or failure of the case. Forensic firearms examination is a forensic procedure that studies the characteristics of guns or bullets left at the scene of crime. Such specialists try to relate people and guns and between bullets and guns. They do this by removing serial numbers so that they may be used as hints for finding out who had registered the weapon, searching for fingerprints on the weapon as well as shell casings.

The unique markings imprinted on a bullet from its gun barrel can help in matching spent ammunition to a particular type of weapon. These marks are caused by striations in the firearm barrel itself. To increase accuracy, the rifle spins the bullet as it jumps out of the barrel. Even though each shot fired alters slightly them, these lines are identifiable pieces of evidence. Therefore, a forensic ballistics examiner is only allowed five shots from any firearm recovered at the crime scene. Comparison microscopes together with cutting-edge 3D imaging technology could be utilized in comparing known samples obtained from confiscated firearms against those collected from crime scenes.

To link guns with separate crime scenes, marks can be matched up with other pictures. Just as other forensic sciences, a court will call experts on ballistics and firearms to be giving evidence. Nevertheless, some forensic dealing with firearms have been questioned over their validity or reliability. Globally, firearms evidence is the bedrock of criminal investigations, and it has a significant impact on justice and safety enforcement. These facts go beyond individual crime scenes to include things like

ballistic analysis, fingerprinting, and guns registration among other forensic practices. This proof makes investigating agency able to identify culprits, connect seemingly unrelated crimes and recreate details of crime scenes in their entirety. Firearms evidence is also crucial in validating witness statements giving more weight to the case against an offender as well as freeing innocent people falsely accused of crimes. It has become relevant even across borders thereby promoting collaboration among law enforcers globally. Decisions on policies and legislations are thus made based on firearms evidence which fits into global goals for public protection from crime. Presumably, firearms evidence provides an anchor or reference point in the complex workings of criminal law which may be used as a guide for creating safer societies.

IV. FIREARMS AS EVIDENCE

The term firearm is defined under Sec 2(e) of the Arms Act 1959. Under arms act “Firearms” means arms of any description designed or adapted to discharge a projectile or projectiles of any kind by the action of any explosive or other forms of energy, and includes –

- (i) artillery, hand-grenades, riot-pistols or weapons of any kind designed or adapted for the discharge of any noxious liquid, gas or other such thing,
- (ii) accessories for any such firearm designed or adapted to diminish the noise or flash caused by the firing thereof,
- (iii) parts of, and machinery for manufacturing, firearms, and
- (iv) carriages, platforms and appliances for mounting, transporting and serving artillery²

According to Every Firearm, ballistics and firearms are crucial to criminal investigations. The exterior and interior of the gun both provide information vital in telling your story. This substance is also found in ammunition that holds back investigation and prosecution for future reference, and assists in intelligence collection and analysis.

² The Arms Act, 1959, §2(e).

Firearms themselves can present various kinds of evidence at a crime scene. These crime scenes may include but are not limited to any location where³:

- A bullet hit one of the victims.
- Someone fired the firearm illegally.
- Firearms or parts were discovered that are suspected to have been used or are connected with crimes. or Parts of munitions were found and are suspected to have been used in or connected with crimes.
- Someone illegally makes/modifies/tests weapons/components/ammunition.

A firearm acquired unlawfully for the purpose/s of committing murder is referred to as a murder weapon. Inspection and monitoring of these objects can:

- This is an indication that the shots fired during the crime were from a gun.
- Can help identify people who may be involved.
- This shows a connection to another incident of crime.
- Demonstrate that an illicit trading network exists.
- Prove there is illegal manufacturing going on.

The proof concerning firearms can fulfil two purposes; thus, it may apply not only to the main crime but also as significant evidence in building a strong parallel criminal case like an international arms trafficking. Occasionally, one and the same piece of evidence can be useful for both investigations. For example, carrying out ballistic analysis may reveal that some firearm was used in a murder case and even in other felonies happening in another country, indicating how this weapon had moved from one place to another within the framework of criminality.⁴ There are times when we disregard evidences such as ammunition, ballistic data, and firearms. In many cases involving criminals, after they have managed to seize or recover weapons, they feel they have done enough. Nevertheless, these items recovered or seized from firearms

³ Heard, Brian (2013). *Forensic Ballistics in Court: Interpretation and Presentation of Firearms Evidence*. John Wiley & Sons. pp. 33-42. ISBN 9781118505014.

⁴ Archana Singh, *Forensic Examination of Firearm*, (10th Sept 2023, 05:45 pm), https://forensicfield.blog/forensic-examination-of-firearms/?expand_article=1.

might be very useful for solving various other types of crimes like guns smuggling and illegal manufacture of guns.⁵

V. EXAMINATION OF FIREARM

Admissible evidence may be obtained if any firearms that were taken during the process of inquiry are scrutinized. These may include the serial number of the firearm and probably fingerprints that were deposited on the firearm surface during forensic examination.

A. Recovering Fingerprints

Super glue fuming is a technique used to develop latent prints on the outer surface of firearms. Instead of smoke, special hoods ensure its uniform distribution in this operation. Liquid super glue within a bottle is heated until it turns into gaseous form. The resultant vapour attaches itself around fingerprint oils thereby making them appear white.⁶ In most cases, fingerprint powder is sprinkled on top of these prints for better visibility against the gun's background colour. Some hurdles when trying to find fingerprints from guns are due to things like texture grip and general state of weapon being inspected. If successful, these fingerprints can be entered into a fingerprint database, such as the Integrated Automated Fingerprint Identification System, for potential matches.⁷

Besides, other parts of retrieved firearms can also be looked at whether there are some DNA traces left by individuals who handled them. Tracing DNA is a major technique in relating offenders to weapons in forensic examinations. Firearm retrieved from crime scenes are examined for any DNA traces left by those who touched the weapon by different parts. Forensic scientists gather these samples using sterile swabs or other collection devices and focusing on regions where there is a good chance of finding DNA, such as grip surfaces or trigger areas. DNA from them is then extracted and

⁵ *Ibid.*

⁶ Heard, Brian (2013). *Forensic Ballistics in Court: Interpretation and Presentation of Firearms Evidence*. John Wiley & Sons. p. 41. ISBN 978-1-118-50501-4.

⁷ Gulick, Gary "Lifting Latent Fingerprints from Difficult Surfaces". *Evidence Technology Magazine*, (10th Sept 2023 05:10 pm), https://www.evidencemagazine.com/index.php?option=com_content&task=view&id=22.

purified in the laboratory. To this end, they use innovative procedures like Polymerase Chain Reaction (PCR), which amplifies and examines DNA, resulting in a unique genetic profile that can be compared with others'. Then this profile can be matched against profiles of potential culprits, victims or persons connected with the case. When a match occurs between known individuals' profile obtained from the firearm and that which is particular it proves beyond reasonable doubts that person used that weapon. Additionally, the offender's DNA could be run through databases like Combined DNA Index System (CODIS) for wider comparison purposes. With this capability, investigators search for matches against offender profiles collected at arrest or linked to other crime scenes that may help identify suspects or establish links to other criminal activities.⁸

B. Serial Number Recovery

Every firearm made or imported into the country contains a serial number. Most importantly, these numbers do not have to be unique; they are often used for many guns by the manufacturers. When a recovered gun has been tampered with or obliterated its serial number, forensic scientists can make attempts of retracing it back to its original form.⁹ For this purpose, there are two main methods: magnetic particle inspection and chemical restoration. Comparatively, magnetic particle examination should be conducted first because it is non-destructive in nature. Chemical restoration is the next step in forensic analysis if magnetic particle examination failed.¹⁰

The significance of recovering the serial number lies in helping investigators track the historical record of a gun and probably determine who owns it. Investigators rely on firearms databases like INTERPOL'S Firearms Reference Table as well as US National Crime Information Centre that assist in tracing lost, stolen or previously involved firearms in crime activities.¹¹

⁸ *Ibid.*

⁹ Technical Procedure for Serial Number Restoration, Wayback Machine, (11th Sept. 2023, 07:10 pm), <https://web.archive.org/web/20220515182942/https://forensicresources.org/wp-content/uploads/2019/07/Serial-Number-Restoration-09-22-2017.pdf>.

¹⁰ *Ibid.*

¹¹ "INTERPOL Firearms Reference Table (IFRT)". *INTERPOL*, (12th Sept. 2023, 10:05 pm), <https://www.interpol.int/Crime-areas/Firearms/INTERPOL-Firearms-Reference-Table-IFRT>.

C. Magnetic particle Inspection

It was originally designed to detect imperfections and anomalies in magnetic materials, but it can be used to reveal the serial numbers of firearms concealed under altered surfaces. This is how an examiner gets the gun into a magnetic field (Magnetic Field is the region around a magnetic material or a moving electric charge within which the force of magnetism acts). Any defect on metal like the serial number affects the shape of that field.¹² When iron particles are applied on firearm surfaces and exposed to a magnetic field, they go where there are distortions lined by these fields as well as accumulate there. The fluorescent particles (Fluorescent particles are those particles that show such activities where they absorb energy from the incident electromagnetic waves falling in the ultraviolet range and emit light in the visible range of wavelength) can be mixed with the solution derived from iron such that when UV light is shone onto this recovered text, it becomes clearer.¹³

D. Chemical Restoration

Chemical restoration is a technique for shaping specific forms by slowly removing material, usually through chemical grinding. A fractional part of the metal is removed during the process of restoring serial numbers until different metals corresponding to particular serial numbers appear. In view of this, grain boundary structure below the metal surface deforms due to number marking. It's only possible when the removal of a sequence number is superficial but restricted in terms of depth and extent.¹⁴ Firstly, inspector puts sand on top where a serial number has been etched off. This procedure helps eliminate dirt particles from surrounding areas. Then, examiner will choose an appropriate acid which is usually considered as slow-acting; it brings back the original serial number step by step. The choice of suitable chemical depends on the material used to manufacture firearms. Such acids may be Fry's reagent consisting of hydrochloric acid mixed with cupric chloride and distilled water useful for

¹² Utrata, Dave; Johnson, Marcus, "Magnetic Particle Recovery of Serial Numbers". Midwest Forensics Resource Center, (11th Sept. 2023, 05:10pm), <https://www.osti.gov/biblio/832893>.

¹³ *Ibid.*

¹⁴ "NCIC Files". Federal Bureau of Investigation. Archived from the original on February 20, 2016.

magnetic alloys or ferric acid chloride solutions employed for non-magnetic substances that are not made up aluminum (non-aluminum).

VI. CARTRIDGES EXAMINATION

Among the physical evidence that might be left behind at a crime scene, investigators frequently examine fired cartridge cases for fingerprints as well as comparing them to samples associated with the weapon in question. This study relies on particular tool marks found on different parts of guns like the ejector and firing pin, mostly in semi-automatic and automatic rifles. Such marks can be matched with known ones which were made from firing the same weapon and ammunition combination. The examiner uses a comparison microscope to look at these markings on the cartridge. Comparison microscope works by having two different optical paths that enable one to view simultaneously two samples such as fired cartridge cases. This helps forensic investigators in examining microscopic tool marks and striations on cartridges, especially ejectors and firing pins. When the examiner aligns and enlarges the question mark and exemplar samples of the same gun, he or she carefully inspects these imprints comparing them for any likeness that would suggest they were shot from the same weapon. Thus, this method is important in firearms examination because it assists in connecting suspects to crime scenes through distinctive characterizations on cartridge cases left by firearms.¹⁵

Another point is that cartridges are routinely checked for fingerprints. Loading bullets into magazines or chambers leaves behind recoverable prints, sometimes surviving shooting and ending up on casings fired off at a crime scene, although this is rare. The presence of usable molds is tested by cyanoacrylate fuming on the casing. For instance, if there is a usable print it may be photographed and entered into a fingerprint database such as IAFIS to compare it with known samples. It can also be used in homicide cases as in homicide investigation, fingerprints on a cartridge casing left at the scene of a murder case were matched with fingerprints in a data bank leading to

¹⁵ Randerson, James "Forensics: Fingerprints can be recovered from fired bullet casings". The Guardian, (12th Sept. 2023, 10:10 pm), <https://www.theguardian.com/science/2008/jun/03/fingerprints.bullets>.

identification of an individual who had been previously convicted. This identification helped in placing the suspect at the crime scene, thus contributing towards his prosecution. Also, it can indicate if the person who loaded the clip had any DNA left behind on the cartridges. However, the challenges associated with low DNA recovery rates are similar to those encountered when collecting DNA from firearms.¹⁶ Micro stamping is one of the recent developments in micro-stamping technology that has led to firing pin micro stamping being adopted. The process includes engraving a unique serial number on a firing pin, which is passed onto the casing while it's being fired. Investigators can utilize this method to link shell casings found at crime scenes to specific firearms. However, it should be understood that gun manufacturers have opposed this technology arguing that it is not reliable and there is lack demonstrated success in preventing or solving crimes with its use.¹⁷

¹⁶ *Ibid.*

¹⁷ Gulick, Gary "Lifting Latent Fingerprints from Difficult Surfaces". Evidence Technology Magazine, (10th Sept 2023 05:10 pm), https://www.evidencemagazine.com/index.php?option=com_content&task=view&id=22.

VII. EXAMINATION OF BULLET

A. Class characteristics

To discard many firearms from consideration, it is necessary to make a primary examination of the bullets gotten by analyzing the general attributes of the discharged bullets. Therefore, this first analysis can reveal to a person that certain guns cannot have been used in shooting that particular category of bullet. Additionally, it is possible to figure out which firearm was used through identifying some few class characteristics associated with a particular manufacturer.¹⁸ There are three major class characteristics common to all bullets: those relating to the bullet's surface and grooves, its diameter or caliber, and the rifling twist inside it. All these three parameters are directly connected with what barrel will fire such bullet. The barrels lands and grooves also known as ridges on the rifles are very vital too.¹⁹ Caliber denotes barrel diameter whereas twist refers to the direction in which rifling imparts spin on leaving the barrel clockwise (right-handed) or counter-clockwise (left-handed). Most barrels have a right-hand twist except for Colt Manufacturing Company whose barrels have left-hand twist. These class characteristics are instrumental in determining whether a recovered bullet could have been fired from a specific weapon.²⁰

B. Individual Characteristics

Forensic investigators need to gather samples from the confiscated firearms in order to compare individual striations. When it comes to bullets that travel at much slower speeds like the ones fired from pistols and revolvers, known bullet specimens are usually obtained by firing a weapon into a tank filled with water. The method is capable of getting intact spent bullets since the water reduces the bullet's speed before it hits the wall of tank.²¹ However, for swifter moving bullets such as those discharged from high-powered rifles as well as military style firearms, use of water tanks is not applicable because they do not have enough stopping power for these projectiles. In

¹⁸ DiMaio, Vincent J.M. (2016). *Gunshot Wounds: Practical Aspects of Firearms, Ballistics, and Forensic Techniques (3rd ed.)*. CRC Press. p. 1. ISBN 978-1-4987-2570-5.

¹⁹ *Ibid.*

²⁰ *Ibid.*

²¹ Firearms as evidence, UNODC, (13th Sept. 2023, 11:05 pm), <https://www.unodc.org/e4j/en/firearms/module-8/key-issues/firearms-as-evidence.html>.

this case, investigators may be required to shoot these arms at a target while standing at a distance away with adequate stoppage support to arrest the trajectory of the bullet prior collection of shell casing after firing.

At this point, we can now compare our sample with that known specimen by simultaneously examining both samples under a comparison microscope. The examiner examines aligned lines closely which look for consequent matches in series. It should be noted that there is no specific number of consecutive matches that conclusively say there is a match. Examiner are trained to use the phrase "sufficient agreement" when presenting their findings. The extent to which an examiner can make these determinations is influenced by their training and experience. It is important to recognize that during court testimony, both the prosecution and the defense may examine and contest any of the examiner's findings.

VIII. FIREARM REGISTRATION AND OWNERSHIP RECORDS

Firearm registration and ownership records are powerful tools in the hands of law enforcement agents investigating crime. Some states maintain databases that keep track of legal ownership of firearms, including the names of individuals who buy them. When found at a crime scene, these records can be reviewed to determine its origin. Such details could help to unravel the mystery behind any possible illegal handling of it by certain people or even the involvement by others.

A. Importance of registering firearms

1. **Accountability:** The purpose for which this firearm is registered is to hold those who possess them accountable for their actions. In order to own a gun legally, legitimate buyers must pass a background check designed to establish whether they meet specific criteria.
2. **Transfer Tracking:** Among other things, such kind of record keeping is essential in tracking guns as well as their movements in an effort aimed at ensuring that they do not get into wrong hands.

B. Firearms in cold cases

At times when leads fail investigators, examining firearms ownership records may give new lifelines for investigations towards resolution. It would be quite interesting if during investigation an unregistered gun belonging to one suspect appears out of nowhere and represents another line for police investigation in a case that has been dormant for long years. Moreover, firearm records including ownership and registration have been critical towards solving numerous crimes in India. For instance, take 1993 Mumbai bombing which is one of the most destructive terrorist attacks in Indian history. In the course of carrying out investigation regarding the bombings, firearms used in these attacks were found. That way, it was possible for detectives to know who had legally bought those weapons by determining how they got into wrong hands through registering them. This made it possible for security agencies to narrow down suspects list while gleaning insight on would-be executors.²² Furthermore, during instances such as organized crime or gang violence, firearm registration record has been employed in tracing movement of illegal guns and identifying individuals dealing with arms trafficking illicitly. The registration data was then correlated with recovered guns from crime sceneries whereupon police broke up ring and disrupted contraband flow.²³

IX. CHALLENGES AND CONTROVERSIES

While firearms offer great evidentiary value in criminal investigations, they also present challenges and controversies that must be overcome.

A. Illegal firearms

For instance, criminals frequently use unregistered, unlawfully obtained guns which makes tracking their origin and ownership difficult. This constitutes a significant hindrance to thorough investigations as absence of property records may impede identification of the suspects.²⁴

B. Firearm Changes

²² Archana Singh, Forensic Examination of Firearm, (10th Sept 2023, 05:45 pm), https://forensicfield.blog/forensic-examination-of-firearms/?expand_article=1.

²³ *Ibid.*

²⁴ Randich, Erik; Duerfeldt, Wayne; McLendon, Wade; Tobin, William (July 17, 2002). "A Metallurgical Review of the Interpretation of Bullet Lead Compositional Analysis". Forensic Science International, (14th Sept. 2023, 08:05 pm), [http://doi:10.1016/S0379-0738\(02\)00118-4](http://doi:10.1016/S0379-0738(02)00118-4). PMID 12175947. S2CID 22272775

Criminals can modify or tamper with firearms to eliminate serial numbers or alter their appearance. These alterations may complicate efforts to trace weapons' origins and owners.²⁵

C. Ballistics Controversy

However significant ballistic analysis is, it remains a controversial field. Critics argue that ballistics is not 100% reliable, leading to potential mistakes in linking certain firearms to crime scenes. Therefore, further research and enhancements of forensic skills are important in addressing these concerns.²⁶

D. Legal and ethical issues

Another issue related to the use of guns as evidence is legality and ethics especially concerning gun holders' rights. It is always hard striking a balance between effective criminal investigations and individual privacy. However, the loss of privacy for lawful gun owners collides with legal and ethical issues over firearms. The stringent firearm regulations in the country require that individuals obtain licenses hence they are subjected to background checks and other procedures by various concerned authorities. These measures, however, while aimed at controlling firearms and ensuring public safety, raise concerns about striking a balance between effective regulation and individual privacy rights. Through their personal details in order vetting processes as well as strict reporting requirements, these people can feel that their privacy is being violated. In addition, there could be concerns over data security in relation to maintenance of gun registration databases by governmental agencies including possibilities of unauthorized access or misuse of personal information. That said, policymakers must critically examine how regulations may impact on individual liberties as well as freedoms when contemplating whether to balance the need for restricting firearms with protecting privacy rights.

X. CONCLUSION & SUGGESTIONS

In conclusion, analysis of firearms and evidence is central to criminal investigation, allowing detectives to learn much about the events surrounding a crime. Every piece

²⁵ *Ibid.*

²⁶ *Ibid.*

of information, from ballistics identification data to firearm records, acts as another piece of the puzzle leading towards understanding this intricate web. The core concept behind forensic firearms examination lies in exploring the minute markings and identifiable features that can be found on weapons and bullets, helping investigators establish connections between such tools and criminals. Additional methods like fingerprint retrieval or DNA profiling also speed up the process by providing leads and pinpointing individuals tied to these illegal activities. The recovery of serial numbers is an important part of the process of determining the ownership of firearms; it helps to know their origin and their migration route. The investigation procedures involving cartridge examination, which includes fingerprint analysis and micro-stamping, are additional forensic processes that can be used to detect guns used in criminal activities. It is worth mentioning that, although firearms contribute significantly as proof, many difficulties and disagreements also occur. This is where illegal firearms pose one of the most challenging obstacles, as they can never be documented with registration records, rendering them untraceable in a tracing process. Further modifications or alterations made to firearms lead to challenges in investigations that may derail vital evidence, such as serial numbers. In addition, the reliability of ballistic analysis is under scrutiny, and therefore, it continues to require further research and enhancement in forensic methods. Furthermore, legal and ethical aspects involving firearm regulations, as well as individual rights to privacy, are among the complex matters demanding a fine line between effective investigation and protection of civil liberties. Therefore, the analysis of weapons and associated evidence plays a vital role in criminal proceedings by providing investigators with useful information on the details surrounding the act. Although met with some difficulties and even controversies, recent breakthroughs in forensic science have made it possible for forensic experts to ensure an increased accuracy and reliability of firearm analysis that helps law enforcement agencies hold criminals accountable while dealing with intricate legal procedures as well as moral dilemmas. Nevertheless, there are issues and controversies such as possession of illegal guns by criminals, alterations made on weapons by criminals and arguments about reliability of ballistic analysis.

It is suggested that the following proposals can be considered to address the issues and improve the effectiveness of forensic investigations regarding firearms:

- a) **Technological Advancements:** Continued investment in high-tech equipment such as 3D imaging, micro-stamping or advanced ballistics analysis could make forensic examinations more accurate and reliable.
- b) **Training and Standardization:** Training all forensic experts who examine firearms thoroughly and developing standard protocols may guarantee uniformity and dependability of forensic findings. That way people's fears about vulnerability of ballistic analyses could be reduced.
- c) **National and International Collaboration:** Nation-wide and worldwide collaboration between law enforcement organizations, ballistics libraries, and forensic labs could help in tracing firearms particularly when they are used illegally across borders.
- d) **Legal and Ethical Considerations:** Striking a balance between protecting the privacy of individuals and preserving their Second Amendment rights on one hand, and enabling effective investigation of crimes on the other is essential. There is need to constantly revise legislation and ethical codes so as to meet emerging challenges.
- e) **Public Awareness:** Promoting understanding in society about importance of lawful possession of firearms, responsible gun ownership as well as consequences awaiting people who indulge in any illegal activities using guns can bring down criminality levels thus enhancing community safety.
- f) **Research and Development:** Funding research aimed at enhancing forensic science technologies as well addressing controversial issues related to firearm analysis will enhance general acceptance and reliability of these methods within the judicial system.

Despite their ability to resolve criminal cases firearms should have its forensic examination be managed with care while taking into consideration its complexity or

difficulties. By adopting these suggestions, the criminal justice system can strengthen its ability to use firearms as evidence while upholding legal and ethical standards.

XI. REFERENCES

STATUTES

1. Arms Act, 1959.

BOOKS-:

1. Firearms Investigation Identification and Evidence - Frank J. Jury & Jac Major Weller Julian S. Hatcher
2. Handbook of Firearms and Ballistics: Examining and Interpreting Forensic Evidence (Developments in Forensic Science) (2008)- Brian J. Heard
3. Gunshot Wounds: Practical Aspects of Firearms, Ballistics, and Forensic Techniques (3rd ed.)- J.M. Vincent & DiMaio.

WEBSITES-:

1. <https://forensicfield.blog/forensic-examination-of-firearms/>
2. https://www.evidencemagazine.com/index.php?option=com_content&task=view&id=22.
3. <https://www.sciencedirect.com/science/article/abs/pii/S187249730900044>.
4. <https://www.theguardian.com/science/2008/jun/03/fingerprints.bullets>.
5. <https://www.unodc.org/e4j/en/firearms/module-8/key-issues/firearms-as-evidence.html>.
6. <https://www.interpol.int/Crime-areas/Firearms/INTERPOL-Firearms-Reference-Table-IFRT>
7. <https://forensicresources.org/wp-content/uploads/2019/07/Serial-Number-Restoration-09-22-2017.pdf>.
8. https://forensicfield.blog/forensic-examination-of-firearms/?expand_article=1.