

FIREARMS REGISTRATION

COSTS VS. BENEFITS

**(A Survey of State Law Enforcement Agencies
on Firearms Registration)**

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It is hoped that this survey will make a worthwhile contribution to the literature in the field of law enforcement.

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INTRODUCTION

FIREARMS REGISTRATION

This survey is concerned with measuring some of the benefits attributed to firearms registration programs.

Firearms registration in its simplest form may be defined as the recording of firearm serial numbers for the purpose of providing a means of tracing a firearm to the owner. But in practice, firearms registration hardly ever takes this pure form. Usually, it is combined with some type of firearm-owner licensing system (30) or is couched in terms which enable the police to deny registration, and in effect ownership, to certain persons. For example, the Sullivan law is used in New York City as a means of denying legal handgun ownership to virtually all of the citizenry (5, 24). While the general public nearly always thinks of registration as the theoretically simple procedure of recording firearm serial numbers, gun owners invariably view it in this more restrictive sense.

National firearms registration continues to be offered by some as a partial solution for the nation's crime problems. After registration bills in Congress were defeated in 1967-68, nearly identical bills were introduced in the Ninety-First Congress. Similar proposals were introduced at state and local levels. The subject continues to be surrounded by controversy.

Those advocating firearms registration claim it would provide these benefits:

1. It would enable law enforcement agencies to solve crimes by determining the ownership of firearms through a tracing of firearm serial numbers.
2. It would enable police to arrest persons carrying unregistered firearms.
3. It would make it more difficult for undesirables to obtain weapons.
4. It would reduce the number of firearms owned by individuals and this would result in fewer crimes being committed.
5. It would help prevent suicide.
6. It would help prevent firearm accidents.
7. It would substantially increase the rate of return of stolen firearms to the rightful owners.

Those opposed to firearms registration maintain that these benefits do not in fact accrue from a firearms registration program. They say that:

1. Criminals do not register their firearms.
2. Many firearms used by criminals are stolen and tracing them by serial number would only lead to an innocent person, perhaps causing that person to be falsely accused.
3. If a criminal were to be apprehended while committing a crime, possession of an unregistered firearm would only constitute a minor, additional charge which could be placed against him. Where there is no evidence of a crime being committed, police do not have authority to search persons or homes for unregistered firearms without a search warrant.
4. Virtually all of the states already have laws which either require a permit for the carrying of concealable firearms or prohibit it altogether.

5. The presence or absence of registration is not a determining factor in either suicides or accidents.
6. It should be up to the individual to keep a record of the serial numbers of his own firearms in case of theft. There is no need for the government to assume this function for the firearms owner.
7. The high costs of instituting and maintaining a firearms registration program would not be justified in terms of the extremely limited benefits which it could be expected to provide.
8. Registration would be used as a subterfuge to eventually deny firearms ownership to legitimate citizens as is now the case with handguns in New York City.¹

COSTS VS. BENEFITS

The answer to whether or not legislation providing for a national registration program should be enacted should not depend upon the philosophical, ethical or emotional issues of whether firearms ownership is moral or immoral or whether guns are good or bad. Rather, it should depend upon a factual examination of the above arguments. The crux of the matter would seem to be whether or not the benefits of a registration program, whatever they may be, are worth the costs of administering it. A corollary to this is whether or not monies proposed to be devoted to the administration of a registration program could not be spent in another area of crime prevention with better results. This would have to be determined by a cost-benefit analysis. So far, proponents of firearms registration have not made any thorough examination of cost factors.

Although few people realize it, there is already a considerable amount of de facto firearms registration at the federal, state and local levels of government. A cost-benefit analysis could logically begin with an examination of these existing programs.

Little is known about the dollar costs of these programs, except that they are substantial. But without the availability of more precise cost figures, it is impossible to measure the value of these programs in terms of a cost-benefit ratio.

Some data are available relative to the probable costs of a national firearms registration program. According to H. Richard Cossaboon, President of Management Concepts, Inc., national compulsory gun registration would require "one of the most gigantic computer operations ever undertaken (9)."² Cossaboon studied the problem simply as an "academic exercise," since the question of gun registration had often been in the news. Disclaiming any personal interest in firearms registra-

¹ See the numerous statements to this effect made by the New York City Police Department (24).

² Management Concepts, Inc. is a management information consulting firm with offices at Bala-Cynwyd, Pennsylvania.

tion, he studied it because no one had explained how the government would go about the task if a complete registration bill was enacted by the Congress.

Cossaboon stated that the problem "would require the solving of at least five completely unique systems problems: data collection, data conversion, data storage and retrieval, data dissemination, and data communications, as well as providing a real challenge in overall data systems management." Registration of each gun would require more than 130 characters. He estimated that "it would take at least two years to complete the project and would involve a staff of several hundred people." It would require "a team of qualified experts at least six months just to devise a workable system."

About 5 million new firearms were sold in 1969 in the United States. Several million pre-owned firearms also changed hands. Each time a gun was bought, sold, traded, or an owner moved, the information would have to be changed and updated.

Other cost estimates have appeared from time to time. In testimony before the senate subcommittee to investigate juvenile delinquency in 1968, Internal Revenue Service director Sheldon Cohen stated that the costs of establishing a centralized computer system capable of registering 75 million firearms would amount to more than \$25 million, with an annual continuing cost of more than \$22 million (8).

These IRS cost figures were not based upon any detailed cost analysis, but were estimates presented in support of the Johnson administration's proposed firearms legislation. They should be considered conservative. Furthermore, they relate only to the central registration of firearms, and do not include any costs associated with the collection of registration data or the prosecution of violations. They also do not include any costs connected with the licensing of firearm owners which might be included in any firearms registration program enacted by the Congress. If licensing is included, initial costs could elevate to \$1 billion or more.³ According to a study done by Research Associates Inc.⁴ for the National Commission on the Causes and Prevention of Violence, "Most registration proposals are either combined with a licensing proposal or vary from the pure form (of registration —ed.) by also requiring an investigation (30)."

None of these cost estimates take into consideration any of the indirect costs to gun owners and the general public which would derive from a national firearms registration program.

Indirect monetary costs to gun owners resulting from firearms registration or licensing programs are indirect only in the sense that they are not part of the direct cost of these programs borne by the government (30). Examples of such possible costs are licensing fees, notary fees, costs of photographs, costs of finger-printing, costs of any required safety tests or training courses, transportation expenses, lost time at work, and court costs resulting from gun owners' appeals of decisions made by government officials administering the programs.

Indirect monetary costs to the general public are those resulting from firearms registration programs that

the public would have to pay, probably through taxes, but are not directly incurred in the implementation and administration of the program itself. In "A Preliminary Cost Analysis of Firearms Control Programs," Research Associates list as examples the reduction in conservation funds that could result from firearms registration programs, reduction in excise taxes accruing to general revenue, increases in the costs of military marksmanship training, and an increase in the cost of small arms and ammunition production for national defense (30).

There would also be indirect non-monetary costs resulting from a national firearms registration program. Both the gun owner and the general public would be affected. Research Associates put gross inconvenience to or harassment of lawful owners of firearms in this category (30).⁵

³ The highest cost of firearms licensing which has yet been documented is in New York City, where the average cost of processing an application for a pistol permit in 1968 was \$72.87 (30). Thus, a theoretical initial cost of licensing and registering the guns of 40 million firearm owners could be placed at \$2,914,800,000.

In 1967, New York City enacted a law providing for the licensing of rifle and shotgun owners and the registration of their firearms. The city administration reported that the ultimate cost of this program could be as high as \$25 per gun (23). Using this figure to project the cost of a nationwide program registering 125 million firearms results in an estimate of \$3,125,000,000. This cost figure is roughly comparable to the one noted above.

All of these cost figures are in terms of 1968 dollars. They do not include either the cost of enforcing the laws or the indirect costs associated with them. In a cost-benefit analysis, these would be taken into consideration.

Estimates of the number of firearm owners in the United States range from 40-50 million individuals. Estimates of the number of privately owned firearms vary from 100-200 million, depending upon the source. The writer estimates that there are currently "about 125 million" privately owned cartridge firearms in the United States.

⁴ Research Associates Incorporated (D.C.) is an independent research organization with headquarters in Silver Spring, Maryland.

⁵ In "A Preliminary Cost Analysis of Firearms Control Programs," Research Associates cite as an example of indirect non-monetary costs resulting from a firearms law, the inconvenience and harassment of gun owners in New Haven, Connecticut, where applicants for pistol permits are required to fill out a 21-page form stating detailed information about themselves (30). New Haven continues to require the completion of this form despite an opinion from the Attorney General that such forms are not allowed under existing Connecticut law. The applicant must provide information about his citizenship, medical history, military service, education background, employment record and residential history. He must also provide details on when and where he intends to use his firearms, including the type of firearm, frequency of use, days of the week, and hours of the day.

A rational approach to public policy decisions demands cost analysis and the establishment of cost-benefit ratios for all proposed programs. Legislators must appraise priorities and determine which of the various proposed anti-crime programs are most effective in obtaining desired objectives. If legislators are to do this, and make effective decisions on resource allocation, they must have information on program analysis and evaluation.

Cost-benefit analysis provides for the quantitative evaluation of the economic and social benefits and the economic and social costs of program alternatives, both present and future. Any decision maker, whether he is a legislator, businessman or head of a family, must be guided by the probable gains and costs of his decisions if he is to be successful in achieving his objectives. To ignore the careful consideration of gains and losses is equivalent to saying that he has no true objectives at all — no goal which he is attempting to achieve.

About 5 billion dollars a year is now being spent in the United States on law enforcement and correctional activities. If additional funds were to be made available in this area, for what would they be spent? Would they be used to increase the salaries of law enforcement personnel? To increase the number of law enforcement personnel? To improve relationships between law enforcement and the public? To upgrade law enforcement equipment and facilities? To provide additional training for law enforcement personnel? To increase the efficiency of the courts? To upgrade penal institutions? To increase efforts being made to rehabilitate persons convicted of crimes? Or to establish firearms registration programs?

The evaluation of alternatives via cost-benefit analysis is likely to aid in the determination of just what are the real objectives. Concomitantly, the risk that decisions will be made on primarily a political or emotional basis is considerably reduced.

A national firearms registration program would affect more than 40 million Americans. It would require the commitment of a significant portion of those federal funds which might be made available for law enforcement and correctional activities in any given fiscal year. On this basis alone, a good case could be made for subjecting any proposed registration program to a thorough-going cost-benefit analysis.

FEDERAL PROGRAMS

There are currently three firearms registration programs at the federal level.

A national registration list of stolen and missing firearms is maintained by the Federal Bureau of Investigation. Data on stolen and missing guns are furnished to the FBI's National Crime Information Center on a voluntary basis by state and local law enforcement agencies. As of March 1, 1969, data on 186,667 firearms were stored in the Center's computers. This program has added to the capabilities of law enforcement agencies.⁶ While cost figures for the system are not available (11), this stolen/missing firearms registration

program has received the backing of law enforcement personnel and sportsmen. Since many state and local law enforcement agencies have kept records on stolen guns in the past, the NCIC affords individual agencies access to data acquired by other agencies and eliminates the need for each agency to maintain separate records.

Machine guns, sawed-off rifles, sawed-off shotguns, firearm silencers and other gangster-type weapons, mortars, bazookas, anti-tank guns, and other so-called "destructive devices" are required to be registered under a program administered by the Alcohol, Tobacco and Firearms Division of the Internal Revenue Service, U.S. Department of the Treasury. This compulsory registration program was first established by the National Firearms Act of 1934 and later expanded under the Gun Control Act of 1968. There are now some 125,000 firearms and other weapons registered under this program, which has always been supported by law enforcement, the firearms industry and sportsmen alike. This registration program covers only gangster-type weapons and destructive devices. It does not affect sporting rifles and shotguns or handguns used by hunters and target shooters.

It is not generally known that there has existed, for many years, a compulsory system of registration of firearms which go through firearm dealers. All firearm dealers are licensed by the federal government. Since 1938, they have had to keep complete records of all firearm transactions as required by the Secretary of the Treasury under the provisions of the Federal Firearms Act of 1938 (U.S. Code, Title 15, Chapter 18) and the Gun Control Act of 1968 (Public Law 90-618, which superseded the Federal Firearms Act on December 16, 1968). These records must include the make, model, type, caliber or gauge, and serial number of each and every firearm (rifle, shotgun or pistol, new or used) bought or sold, the date such firearm was bought or sold, and the name and address of the person or business from whom the firearm was purchased, or to whom the firearm was sold, as the case may be. Gunsmiths must maintain similar records on all firearms which they take in for repair or alteration. These records must be maintained by the dealer or gunsmith permanently and made available to law enforcement officers upon request.

In addition to these records, each sale of a firearm by a licensed dealer requires the completion of a "Form 4473," listing the purchaser's name, address, height, weight, race, date of birth, place of birth and signature. The dealer must record on this form the method by which he identified the purchaser, e.g. driver's license number, selective service registration number, etc.

⁶ Consider the case where a suspect in possession of a firearm is picked up by the police in connection with a criminal investigation. The police may be able to ascertain, through the facilities of NCIC's stolen/missing gun list, whether the suspect's firearm has been stolen. If the gun is stolen, further investigation may lead to the solution of some crime other than that for which the suspect was originally arrested.

Dealers are also required to keep records on .22 caliber rimfire ammunition, handgun ammunition, and components used for reloading handgun ammunition. These records include the date of the sale, the manufacturer of the ammunition or component, the caliber, gauge or type of ammunition or component, the quantity purchased, the purchaser's name, address, date of birth and the method by which the purchaser was identified.

Records must be kept by firearm manufacturers and wholesalers as well as by dealers and gunsmiths. Thus, it has been possible for some time to trace a firearm by its serial number from the manufacturer down through the normal channels of trade to the consumer who purchased it.

While these firearm transaction records are kept on the premises of firearm dealers, any information they contain must be made available upon request to the Assistant Regional Commissioner of the Internal Revenue Service, U.S. Department of the Treasury. The Treasury Department cooperates with local law enforcement agencies by making this information available to them as needed.

The records required to be kept by federal law constitute, in effect, a limited compulsory national firearms registration system. At present, the data contained in these records are maintained at the manufacturer, wholesaler and dealer level.⁷

The rigid record keeping by the U.S. Armed Forces on firearms issued to military personnel constitutes another limited firearms registration which is national in scope. While these records remain in the hands of the military authorities, they are made available to law enforcement personnel whenever necessary to assist them in criminal investigations.

This maintenance of records by the armed forces is somewhat analogous to the maintenance of records by an individual firearm owner. Although these records are maintained primarily for purposes of accounting and inventory, they also serve as a safeguard in case of theft. Theft of firearms from military installations has been substantial in the past. Basic data from the U.S. Department of Defense show that during the period 1954 through 1964, an estimated 16,000 firearms were stolen from U.S. Military active and reserve installations (31).

While not a federal program, still another type of registration which is more or less national in scope is that involving firearms issued to or owned by law enforcement personnel. Many police departments, sheriff's offices, etc. keep records on the firearms held by their employees. Even though only a portion of all law enforcement agencies maintain such records, the number of firearms so registered is considerable. According to the U.S. Department of Justice, there were 468,000 full time and part time individuals employed by government for police protection as of July, 1963 (33). While not all of these employees have firearms, many have more than one. In addition, many firearms of a specialized nature, e.g. riot guns, are kept by law enforcement agencies and issued to their personnel as needed.

HAYNES V. UNITED STATES

In 1968, the United States Supreme Court ruled that a person possessing a firearm illegally could not be prosecuted for failing to register that firearm under the registration provision of the National Firearms Act of 1934.⁸ In *Haynes v. United States*,⁹ the court said that such a person, in registering, would be subject to possible self-incrimination. The court determined that the Fifth Amendment protects an individual from having to run such a risk. Thus the court cast a shadow over all firearms registration laws at the federal, state and local levels of government.

When the Gun Control Act of 1968 was enacted,¹⁰ the provision requiring the registration of gangster-type weapons and destructive devices was constructed so as to be compatible with the Haynes decision. Section 5848 of the Act, entitled "Restrictive Use of Information," states that:

No information or evidence obtained from an application, registration, or records required to be submitted or retained by a natural person in order to comply with any provision of this chapter or regulations issued thereunder, shall, . . . be used, directly or indirectly, as evidence against that person in a criminal proceeding with respect to a violation of law occurring prior to or concurrently with the filing of the application or registration, or the compiling of the records containing the information or evidence.

Chicago enacted a firearms registration ordinance the day after the Haynes decision.¹¹ In order to avoid conflict with the Court's ruling, the Chicago City Council amended the new law to provide that any person who is not legally entitled to possess a firearm is not eligible to register it. Chapter 11.1-15 of the law reads:

Any person under 18 years of age, any narcotic addict, any person who has been convicted of a felony under the laws of this State or any other

⁷ Section 923, paragraph (g) of the Gun Control Act of 1968 states that importers, manufacturers and dealers "shall make such records available for inspection at all reasonable times, and shall submit to the Secretary (of the Treasury —ed.) such reports and information with respect to such records and the contents thereof as he shall by regulations prescribe," and that "Upon the request of any State or any political subdivision thereof, the Secretary may make available to such State or any political subdivision thereof, any information which he may obtain by reason of the provisions of this chapter with respect to the identification of persons within such State or political subdivision thereof, who have purchased or received firearms or ammunition, together with a description of such firearms or ammunition."

⁸ U.S. Code, Title 26, Chapter 53.

⁹ *Haynes v. United States*, 390 U.S. 85 (1968).

¹⁰ U.S. Public Law 90-618.

¹¹ Chapter 11.1 of the Municipal Code of the City of Chicago.

jurisdiction within 5 years from release from penitentiary or within 5 years of conviction if penitentiary sentence has not been imposed, and any person who has been released from a mental institution or from the custody of the Illinois Youth Commission within the last 5 years, or is mentally retarded, and any person who possesses any firearm, the possession of which is prohibited by any State or Federal law relating to weapons or firearms, shall be ineligible to register pursuant to this Chapter. Any purported registration by any of the above-described persons shall be null and void.

This decision of the Supreme Court would seem to have a direct bearing on the anticipated results of any new firearms registration law that was intended to provide a means of solving crimes through the tracing of firearms by serial numbers. Either (1) criminals will not have to register any firearms they possess or (2) it will not be possible to use any information obtained through registration against them in the prosecution of any crime which occurred prior to or concurrent with the acquisition and compiling of the registration data.¹²

The full meaning of the Court's decision in *Haynes v. United States* will become evident only after further litigation. But it is something that legislators will have to cope with in any new registration proposals.

STATE PROGRAMS

None of the fifty states have total registration of all firearms. Prior to 1958, Hawaii had such a program, but in that year the portion of the law requiring the registration of rifles and shotguns was repealed. Hawaii still requires the registration of all handguns, as does New York, Mississippi and Michigan. Michigan leads in the number of guns registered with more than 1,200,000. Mississippi and West Virginia have limited registration of certain long arms.

Firearms registration in New York was the subject of a previous study, "Does Firearms Registration Work? (19)." In this statistical analysis of New York crime data, firearms registration was evaluated in terms of its effectiveness in reducing crime rates, solving crimes, causing the recovery of stolen firearms, and its effect on the legitimate ownership of handguns for use in the shooting sports and for personal protection.

A considerable number of states have some handgun registration data which have become available through programs providing for the processing of applications to purchase firearms or the issuance of either permits to purchase firearms or permits to carry firearms. Connecticut, for example, has on file data covering some 150,000 firearms.

Eleven states have voluntary firearms registration programs where an individual can register his firearms with the state law enforcement agency rather than maintain his own records. However, citizen participation in these voluntary registration programs has been extremely limited.

LOCAL PROGRAMS

Local firearms registration programs are extant in a number of cities. These are described in "Published

Ordinances Firearms," which contains state laws and local ordinances relevant to federal firearms laws (32). This publication is furnished annually to all federally licensed firearm dealers by the Internal Revenue Service.

Three major cities which require the registration of all firearms are Chicago, New York and Miami.

SYNOPSIS

It is apparent that a significant quantity of registration data have been compiled at national, state and local levels. These data are not centralized. They are by no means complete. Nevertheless, considerable opportunity is provided for law enforcement agencies to attempt to trace firearms misused in criminal acts. If the tracing of a firearm by serial number is an effective means of solving crimes, a survey of state law enforcement agencies on their experiences with firearms registration data should provide some evidence of this effectiveness.

Table 1 summarizes the various sources of firearms registration data now extant in the United States.

THE SURVEY

This survey was meant to contribute to the existing sphere of knowledge regarding costs and benefits associated with firearm registration programs. It does this by gauging the experience of state law enforcement agencies with the registration tools now available to them. It was not intended that this survey serve as a means of evaluating firearms registration programs which might come into existence at some future time.

METHODOLOGY

To elicit information on how state law enforcement agencies have been able to utilize the tools of registration which have been available to them, a questionnaire was developed and sent to all fifty states. This questionnaire included an explanation of the survey and requested each agency to report on any cases of criminal homicide, aggravated assault or robbery which it knew to have been solved through the tracing of a firearm by serial number during the ten-year period 1959-1968. A remarks section was provided so that each agency could report any additional data which it deemed pertinent to the purposes of the survey. For example, an agency might wish to voice a personal opinion, based upon past experience, as to the effectiveness of firearms registration.

¹² In the case of crimes which occur subsequent to registration, it is a prime contention of those opposed to registration that the criminal does not register his firearm prior to committing a crime with it. An editorial in *Gun Week*, a weekly newspaper in the shooting sports field, concluded a discussion of *Haynes v. United States* by stating "The Supreme Court has simply pointed out the obvious — that only law-abiding citizens obey gun registration and licensing laws. The major effect of the decision is that now the law cannot ask a criminal to do what he has never done anyway!" (18).

TABLE 1. Firearms Registration in the United States, by State: 1968.

State	Registration of all guns purchased from firearm dealers ¹	Registration of all firearms held within the state by the military ²	Registration of all handguns	Registration of handguns for which permits are issued ³	Registration of certain long guns ⁴	Voluntary registration
Alabama	X	X		X		
Alaska	X	X				
Arizona	X	X				
Arkansas	X	X				
California	X	X		X		
Colorado	X	X				
Connecticut	X	X		X		
Delaware	X	X		X		X
Florida	X	X		X		X
Georgia	X	X		X		
Hawaii	X	X	X	X		
Idaho	X	X		X		
Illinois	X	X		X		
Indiana	X	X		X		
Iowa	X	X		X		
Kansas	X	X		X		X
Kentucky	X	X				X
Louisiana	X	X				
Maine	X	X				
Maryland	X	X		X		X
Massachusetts	X	X		X		X
Michigan	X	X		X		X
Minnesota	X	X	X			X
Mississippi	X	X	X			X
Missouri	X	X	X		X	X
Montana	X	X				.
Nebraska	X	X				
Nevada	X	X				
New Hampshire	X	X				
New Jersey	X	X		X		
New Mexico	X	X		X		X
New York	X	X				X
North Carolina	X	X	X			
North Dakota	X	X		X		
Ohio	X	X		X		
Oklahoma	X	X				
Oregon	X	X				
Pennsylvania	X	X		X		
Rhode Island	X	X		X		
South Carolina	X	X		X		
South Dakota	X	X				
Tennessee	X	X		X		
Texas	X	X		X		
Utah	X	X				
Vermont	X	X				
Virginia	X	X				
Washington	X	X		X		
West Virginia	X	X		X		X
Wisconsin	X	X			X	
Wyoming	X	X		X		X

¹ Since 1938, all firearm dealers, regardless of their state of residence, have been required to keep complete records of all firearm transactions as required by the Secretary of the Treasury under the provisions of the Federal Firearms Act of 1938 (U.S. Code, Title 18, Chapter 18) and the Gun Control Act of 1968 (Public Law 90-618, which superseded the Federal Firearms Act of 1968). These records include the make, model, type, caliber or gauge, and serial number of each and every firearm (rifle, shotgun or pistol, new or used) received or sold, the date such firearm was received or sold, the name and address of the person or business from whom the firearm was received, or to whom the firearm was sold, as

the case may be. These records must be maintained by the dealer permanently and made available to law enforcement officers upon request. The information contained in these records must be made available upon request to the Assistant Regional Commissioner of the Internal Revenue Service, U.S. Department of the Treasury. The Secretary of the Treasury may make such information available upon request to any state or political subdivision thereof.

² These records are held by the military authorities.

³ Applications to purchase, permits to purchase, or permits to carry. This registration is therefore limited and varies among the states cited.

⁴ High powered rifles.

The questionnaire was mailed in September of 1968. After a two-month interval, a follow-up letter was directed to those states which had not yet replied. A final plea for completion of the questionnaire was directed to those still delinquent in March of 1969. The three mailings resulted in replies from all but three of the fifty states. States which did not reply were Alabama, Massachusetts and Rhode Island.

Where cases were reported as solved through the tracing of a firearm by serial number, additional correspondence was undertaken in an attempt to obtain detailed information as to the role played by registration.

RESULTS

SERIOUS CRIMES

Forty-four states reported on the number of murders, aggravated assaults and robberies which they knew to have been solved through the tracing of a firearm by serial number during the period 1959-1968. Three states did not reply to the survey, one failed to complete the questionnaire and one declined to participate.

Table 2 contains data on the number of criminal homicides, aggravated assaults and robberies which the various state law enforcement agencies reported as having been solved. The forty-four states completing the questionnaire reported six homicides and six robberies. No aggravated assaults were listed as having been solved through the tracing of a firearm by serial number.

In only two instances was it possible to obtain case details. Hawaii submitted the following data in regard to the two cases of criminal homicide which it reported (12).

"In the cases cited, two police officers were shot and killed on December 16, 1963, in Honolulu. Investigation revealed that the suspects had burglarized the National Guard Armory and had stolen a number of guns. The suspects had later disassembled three carbines and four pistols and discarded the component parts in a stream.

Many of the parts were later recovered by a search team. Serial numbers of fragmented parts of several guns indicated that the guns had been stolen from the Armory and that the suspects had been involved.

These pieces of evidence were later used in the trial of the perpetrators. Although the identifying markings on the parts were not instrumental in the arrest of the suspects, they played an important role in the successful culmination of the case."

New Jersey reported case details on the solution of a homicide (17):

"One murder investigation in particular was successfully concluded by tracing the serial number of a weapon found near the scene of a crime where the victim was discovered in his automobile, dead from a bullet wound in the head. A disassembled pistol frame was found approximately a month later near the scene. The serial number was traced to an importer in the Washington, D.C. area and led to a dealer in the State of Maryland. The records of the dealer indicated the firearm was sold

to a person who used a fictitious name and address. A suspect was apprehended. The dealer who sold the weapon identified the suspect as being the one who purchased the weapon. The suspect had previously used the same fictitious name and when confronted with the information on the purchase, readily admitted the crime."

Virginia recalled a 1959 kidnap-murder where a tracing of a firearm by serial number, while not the mode of solution, was material to the prosecution of the case (20).

Michigan stated: "There is no question that some cases are solved through the identification of a firearm left at the scene of a crime, or perhaps lost in the vicinity. However, I could not provide you with a percentage figure that would be of value (10)."

Oregon reported "... a number of cases involving serious crimes wherein tracing of a firearm by serial number resulted in identification of the criminal responsible for the offense," but apparently did not feel that the cases were significant enough to warrant manual checking of the files to determine numbers and details (15).

Although a vigorous effort was made to obtain complete information on the other cases reported as solved, details were apparently unavailable.

The vast majority of states reported no instances where cases of murder, aggravated assault or robbery had been solved by the tracing of a firearm by serial number. Some were specific in their comments:

Alaska (7)

"Unscientifically, of course, none of our involved personnel can recall any case that was solved through the tracing of a firearm. This recall is limited to our span of experience, which varies from the present back for about 25 years."

Georgia (27)

"This Department has no record of any criminal cases that were solved by means of tracing a firearm by the serial number."

Idaho (6)

"This office has no records whereby the identity of the criminal was made by the tracing of a firearm."

Iowa (3)

"We were unable to recall any instances within the past ten years where cases have been solved by means of tracing a firearm by serial number relative to the categories you have stated."

Kansas (29)

"We have no records of a major crime being solved by tracing of a firearm serial number."

Maryland (22)

"Unfortunately, we do not have such statistical data available; but in our opinion, the number for the last ten years would be negligible, insofar as the Maryland State Police is concerned."

Minnesota (13)

"To my knowledge, no criminal cases have been solved by means of tracing a firearm by serial number in murder and non-negligent manslaughter, aggravated assault or robbery cases in Minnesota."

Missouri (2)

TABLE 2. Major Crimes Reported by State Law Enforcement Agencies as Being Solved Through the Tracing of a Firearm by Serial Number: 1958-1967.

State	Number of Cases Reported Solved		
	Murder and Non negligent Manslaughter	Aggravated Assault	Robbery
Alabama ¹	0	0	
Alaska	0	0	0
Arizona	0	0	0
Arkansas ²	0	0	0
California	0	0	0
Colorado	0	0	0
Connecticut	0	0	0
Delaware	0	0	0
Florida	0	0	0
Georgia	0	0	0
Hawaii	0	0	0
Idaho	2	0	0
Illinois	0	0	0
Indiana	0	0	0
Iowa	0	0	0
Kansas	0	0	0
Kentucky	0	0	0
Louisiana	0	0	0
Maine	0	0	0
Maryland	1	0	0
Massachusetts ¹	0	0	0
Michigan	0	0	0
Minnesota	0	0	0
Mississippi	0	0	0
Missouri	0	0	0
Montana	0	0	0
Nebraska	0	0	0
Nevada	0	0	0
New Hampshire	0	0	0
New Jersey	1	0	0
New Mexico	0	0	0
New York	0	0	0
North Carolina	0	0	0
North Dakota	0	0	0
Ohio	0	0	0
Oklahoma	0	0	0
Oregon	*	0	0
Pennsylvania	0	*	*
Rhode Island ¹	0	0	0
South Carolina	0	0	0
South Dakota	0	0	0
Tennessee ³	0	0	0
Texas	0	0	0
Utah	2	0	2
Vermont	0	0	0
Virginia	0	0	0
Washington	0	0	0
West Virginia	0	0	0
Wisconsin	0	0	0
Wyoming	0	0	0

¹ Did not respond to the survey.

² Responded but declined to take part in the survey.

³ Tennessee replied to the survey but was unable to complete the questionnaire because it would require "a large number of man hours reviewing thousands of cases . . . (14)."

* The Oregon Department of State Police reported "We have

had a number of cases involving serious crimes wherein tracing of a firearm by serial number resulted in identification of the criminal responsible for the offense. Statistical breakdown is such that in order to arrive at specific numbers manual checking of the files would be required. We do not feel that this end justifies the effort (15)."

"During the past ten years, no cases have been solved through the tracing of firearms ownership. Normally tracing of ownership proves unsuccessful for one reason or another, but does occasionally corroborate or add to known information."

New Mexico (1)

"We recall no cases solved by tracing a firearm by serial number."

North Carolina (21)

"... no one connected with the State Bureau of Investigation at this time can recall any case ever having been solved through the tracing of a serial number of the firearm used in the commission of a crime."

Wyoming (26)

"This bureau was established in 1963, and to our knowledge no criminal cases have been solved by tracing the serial number of a firearm."

STOLEN GUNS

Several states had been able to utilize firearm serial number records in cases involving stolen firearms. This utilization involved either (1) the return of stolen firearms to their owners or (2) the arrest of persons carrying stolen firearms.¹³

Iowa, Mississippi, New Jersey and South Dakota thought this aspect of registration important enough to offer specific comments on it:

Iowa (3)

"We have had some instances where thefts of weapons have been solved by serial number."

Mississippi (16)

"The most success this department has had with serial numbers on weapons has been when a suspect is picked up with firearms on his person. The gun is traced through the manufacturer all the way down the line to the purchaser and in many instances, these guns would be stolen from residences or places of business."

New Jersey (17)

"The National Crime Information Center at the State Bureau of Identification makes daily "hits" on positive information regarding stolen firearms and possession of weapons by wanted subjects."

South Dakota (34)

"First, the murders, aggravated assaults, and robberies constitute a very small portion of police business related to firearms. True they get the greater share of publicity, but we and other officers spend much more time on the theft of firearms and the malicious use of them in the destruction of both public and private property."

"The recovery of stolen firearms is a gain to law enforcement as well as to the owner. The owner gets his gun back and we have the opportunity of removing the gun from the hands of a person who may commit one of the crimes you mention. Plus, it can be a great assist in the prosecution of persons who steal and peddle guns in competition to the legitimate dealer."

"Rare is the case when a murderer or a robber merely drops his gun at the scene of the crime. Usually, when it is recovered, it is in his possession or under his control, and it always seems to be a gun that he just bought from 'some guy I met in a bar, day before yes-

terday.' Then starts many hours of attempting to prove or disprove, the person's statement. This usually starts with the firm who manufactured the gun, if said gun has a serial number and is not an import nor a military weapon. Registration would, in my opinion, shorten the route of search. In some cases it has resulted in our being able to trace a theft from an individual and then to the subject."

In New York state, 741,063 handguns were registered with the state police in 1967. The number of firearms reported lost, stolen or illegally possessed was 18,965. The number reported as recovered was 155.

In 1968, 866,623 handguns were registered. The number reported lost, stolen or illegally possessed was 18,672; the number recovered was 384 (4).

However, the number of guns actually recovered may exceed the number of guns reported as being recovered. This is because the New York stolen gun file includes some firearms stolen in other states as well as New York. When firearms stolen in other states are recovered in those states, it may or may not be reported to the New York State Police.

No data are available on the dollar value of these handguns which were recovered through the operation of the New York registration program. With the exception of the FBI's National Crime Information Center, the New York state stolen gun file is the largest maintained by any police agency in the United States.

Texas reported on the stolen gun aspect from a different angle. Their comment that "... upon some occasions we have exonerated some owners who had legitimately sold pistols and had advised us to change ownership in our files (27)" points out another possible benefit of firearms registration. But it also seems to substantiate the existence of an inherent danger — that when a registered gun is lost or stolen and used in a crime, the owner may unjustly be accused. This danger might be expected to increase with the length of time between the loss or theft and its discovery by the owner. It is possible for a firearm to be stolen and the owner not realize it for quite some time.¹⁴

OTHER CRIMES

Other comments received indicate that firearms registration may occasionally be of assistance in the solution or prosecution of crimes other than murder, aggravated assault and robbery.

Three states mentioned this aspect of registration as being important:
Kansas (29)

¹³ In most cases this charge was a supplementary one, the primary charge being either for a more serious crime or carrying a concealed firearm without a permit.

¹⁴ Guns may be stored in the home, often under lock and key, and not be used for long periods of time. If a gun is stolen, perhaps when the owner is away, he may not become aware of the theft until such time as he prepares for his next hunting trip or target shooting match.

"We have used pawn shop sales records to verify that a person bought a gun previous to committing a crime."

New Jersey (17)

"There have been numerous cases in the State of New Jersey that have been solved as a direct result of tracing a firearm. . . .

Presently, daily inquiries as to the ownership of firearms are made to the Firearms Investigation Unit by various police departments. Many times information previously unknown to the inquiring agency is developed through the files and assists them in their investigations."

South Dakota (34)

"... the numerous occasions when other crimes are solved directly or indirectly through the tracing of firearms."

The survey questionnaires and follow-up correspondence did not elicit any detailed information on these other crimes or the role played by firearms registration. Presumably they consist of such offenses as burglary, auto theft, illegal possession of weapons, possession of stolen property, etc.

CONCLUSION

This survey was intended to appraise the results of state law enforcement agencies' experience with the firearms registration tools which have been available to them. Specifically, the survey sought to determine the number of criminal homicide, robbery and aggravated assault cases which, to the knowledge of state law enforcement agencies, have been solved in the past ten years through the tracing of a firearm by serial number. This survey was not intended to evaluate proposed legislation which would establish national or state firearms registration. It was intended to provide additional information which can be applied to a more thorough study of the costs and benefits likely to be associated with an extensive firearms registration program.

It was established that during the ten-year period 1959-1968, the tracing of a firearm by serial number

contributed to the solution of at least six homicides and six robberies in 44 states. There were some additional cases reported but these could not be quantified. Firearms registration data were also reported to have been of use in the solution or prosecution of a number of lesser crimes.

This survey was limited to state law enforcement agencies in the fifty states. In all probability, if local law enforcement agencies had also been surveyed, some additional cases would have been reported. This would especially hold true in those states where the state law enforcement agency was not primarily concerned with criminal cases. However, the results of the author's study on registration in New York indicate that, here again, the numbers would not be large.¹⁵

Firearms registration data were also reported to be of some use in effecting the return of stolen firearms to their rightful owners.

Little is known about the dollar costs of the various firearms registration programs now extant. These costs are substantial. But without the availability of more precise cost figures, it is impossible to measure the value of these programs in terms of a cost-benefit ratio.

A national firearms registration program would affect more than 40 million American citizens. It would require the commitment of a significant portion of the nation's annual law enforcement budget. The results of this survey provide additional evidence that, before the establishment of a registration program is seriously considered at either the federal or state level, a cost-benefit analysis is an absolute necessity.

* * *

¹⁵ An examination of New York City Police Department annual reports for the years 1911-1968 failed to disclose a single case of criminal homicide, assault or robbery that had been solved through the tracing of a firearm by serial number. In addition, an extensive search of New York City newspapers for the fifteen-year period 1953-1968 failed to reveal any instance where the tracing of a firearm by serial number had been material to the prosecution of any criminal case.

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Firearms Identification

A review of 'the state of the art' and an interview with the author of a significant work on the subject

By WALTER J. HOWE, Editor, THE AMERICAN RIFLEMAN



Dr. J. Howard Mathews holds B. S. and M. A. Degrees from the University of Wisconsin (1903), and M. S. and Ph.D. Degrees from Harvard University (1908). He was a founder of Alpha Chi Sigma, the professional chemical fraternity, and he is a Fellow of the American Academy for the Advancement of Science. A commissioned officer in World War I, he served in both the Ordnance Dept. and the Chemical Warfare Service.

Dr. Mathews was appointed Professor of Chemistry and Chairman of the Department of Chemistry at the University of Wisconsin in 1919. He served continuously in these positions until 1952, when he retired. Since retirement, Dr. Mathews has continued to occupy Room 115 on the first floor of the Chemistry Building of the University. This room used to be the anteroom to his office but is now a very well-equipped, compact laboratory for photography and research work on firearms identification problems. All the instruments and special equipment in Dr. Mathews' laboratory bear the mark of having been designed and built by people with the scientific approach. Each device is an entity unto itself, and is designed to do a particular task precisely and conveniently.

At 81 years of age, Dr. Mathews is alert and lively, and comes to his laboratory each day on a regular basis. He continues to photograph firearms and accumulate information.

Although Dr. Mathews has devoted a great part of his life to bringing more of the scientific approach to the investigation of crimes, he has seen much of the practical side of this work in his 16 years of service as a member of the Madison, Wis., Police and Fire Commission, including one term as chairman.

Books devoted primarily to firearms identification are quite a rarity in the otherwise fertile gun book publishing field. Maj. Gen. J. S. Hatcher's *Textbook of Firearms Investigation, Identification and Evidence*, which first appeared in 1935, is still regarded by many as "the best".

Also published in 1935 was *The Identification of Firearms* by Gunther and Gunther. In addition to carrying basic information on firearms identification, fully half of this book is devoted to testimony transcript, mostly from the Sacco-Vanzetti trial.

A revised version of Hatcher's book was published in 1957, all the adding and revising having been done by Jac Weller and the late Frank Jury. Although the revised *Textbook* received less than complete approval from qualified reviewers, it is proper to conclude that the book does contribute significantly to a better understanding of firearms identification work.

Other sources

In the years between the publication of Hatcher's *Textbook* and the Jury-Weller book, information of value, dealing directly with firearms identification, has appeared in the *Journal of Criminal Law and Criminology*, in the *Journal of the American Academy of Forensic Science*, in the *International Association for Identification News*, in foreign criminalistic publications, in enforcement bulletins of state, county, and city police departments throughout the United States, and in publications of the Federal Bureau of Investigation.

Toolmarks, Firearms and the Striagraph by John E. Davis (1958) is one of the few specialized books that has ever been published in the firearms identification field. While its main purpose is to advance the Striagraph and its use, it contains sound basic material and is a rare show of a new approach carried beyond the talking stage.

A very comprehensive and practical 'book' on the principles and techniques of firearms identification became available in 1954 as a part of the criminology course offered by the Institute of Applied Science, Chicago, Ill. This 320-

page 'book' (actually 10 lessons that comprise the firearms identification course) is not sold as such but is available only to those taking the complete course.

For a number of years many technicians engaged in firearms identification work have known that Dr. J. Howard Mathews has been gathering firearms for the purpose of photographing them, and for taking bore and rifling measurements.

The results of Dr. Mathews' years of work is a 2-volume set entitled *Firearms Identification*. In sheer weight (about 9 lbs.) and size (9" x 11½"), the books are impressive. They are distinguished by excellence of reproduction both of type and of photographs. Volume I is 400 pages and Volume II is 492 pages. There are more than 3000 illustrations—mainly halftones—of firearms, bullets, instruments, firing pin impressions, manufacturers' trade marks, and breech faces. The price for the set is \$40 and this figure is modest in view of the quality and quantity of the material furnished. (A complete book review by Gen. Hatcher appeared in the December 1962 issue of *THE AMERICAN RIFLEMAN*, pages 81-82).

While books of this sort never become best sellers in the commonly accepted sense, many people will benefit directly or indirectly from the compilation of such information and they are in the debt of Dr. Mathews, and to a lesser degree to the publisher, the University of Wisconsin Press. In a time when so many things are evaluated by "will it make money", special appreciation and recognition is due to those who take the approach that "this is something we must do and in the best way possible" and then proceed to do it.

Largely reference data

A great bulk of material in these 2 volumes is not subject to controversy since it is straight tabular material and reference photographs. Some small sections, and particularly that dealing with the use of photographs of evidence in court, will certainly bring comments from many firearms identification people engaged in day-to-day court work.

Firearms identification work, as it is understood and as it is practiced today, is less than 40 years old. To be sure, the courts have, for almost a century, permitted individuals who have claimed or showed to have special knowledge of arms to make interpretation to a jury. Such basic observations as testifying that a cal. .38 bullet did not come from a cal. .32 firearm have been made by peace officers, military people, etc.

In the early 1900's reference can be found indicating that a few people were aware of differences in accidental markings on fired bullets and shells *apart from the obvious gross differences*.

The famous Stielow case in New York in 1915 brought forth C. E. Waite, whose work on the case inspired and encouraged interest in the subject to the extent that the *Saturday Evening Post* did 2 articles on bullet identification in 1925.

Waite's work led to the formation of a private Bureau of Forensic Ballistics in New York City by Calvin H. Goddard, Philip O. Gravelle, and John H. Fisher. Waite died in 1926 and in 1930 Goddard became Director of the Scientific Crime Detection Laboratory affiliated with the Northwestern University School of Law. Goddard and some of his associates left this laboratory in July 1934 and established Calvin Goddard Associates in Chicago. The laboratory at Northwestern continued to operate until 1938, when it was purchased by the City of Chicago and became known as the Scientific Crime Detection Laboratory of the Chicago Police Dept.

Goddard's contribution

To Goddard must go a sizeable share of the credit for attracting attention and support to the concept of firearms identification by competent specialists using suitable equipment.

It was Goddard's work on the evidence (bullets and shells) from the St. Valentine's Day Massacre (Chicago, February 1929) that advanced his stature and also the stature of firearms identification.

The FBI laboratory was founded in 1935 and has grown to be the largest and leading facility of its type to be found in the U. S.

Today, firearms identification work is in noticeable transition. It is not because of new techniques, or because instrumentation has been drastically improved. Rather, the change is being fostered by those in position to do something about it, realizing that firearms identification is neither an esoteric pursuit of the high-level sciences, nor a mystical practice of the gun hobbyist. Moreover, common experience demonstrates that it is not a type of work that is the exclusive property of law-enforcement practitioners, or an art that can be properly practiced only by "civilian employees" of a law-enforcement agency.

By no means has the field shaken down to the extent that firearms identification workers will quickly achieve a professional status. There are, however, encouraging signs that can be of

interest to any citizen who may some day become involved in a situation in which firearms identification evidence figures. The most encouraging sign is that practitioners—police and civilian—are promoting better exchange of information. More practitioners are affiliating with societies and associations devoted to improving the art. This alone causes the exchange of information through seminars, meetings, and the presentation of papers.

Another sign

Another encouraging sign of progress is that some police officials (they control crime laboratories) are urging there be less secrecy, and for all concerned to recognize the comparatively meager basic progress that has been made in firearms identification in recent years. Further, it is being admitted that basic research is needed if there is to be advancement in those phases of the work that are in need of it.

Progressive leaders in the field of scientific crime detection encourage the firearms identification man to recognize that many aspects of firearms identification work are comparable to that of tool mark identification.

It is helpful that there are fewer of the 'all our problems are solved' articles appearing in general publications. Many such articles that appeared in the 1920's and 1930's did as much harm as good. They left the reader with the impression that everything was black or white with firearms identification work and that anything short of miracles was easily possible.

Writing is important

It is not advancing the art nor is it aiding in public understanding by cloaking firearms identification work as if it were the exclusive property of a few superknowledgeable practitioners. It is important to the art and to the public welfare that individuals with information of value to practitioners be encouraged to write papers, articles, and, if the material warrants it, books. At the same time, let the critics who bring forth very little original material, but make much of the minor errors that appear in otherwise valuable papers and books, turn their hand to some contribution to the field.

In a field that has evidenced very little true scholarship, and has shown comparatively little progress considering its age, the advent of Dr. Mathews' 2 volumes is worthy of special recognition. Too, it might logically be a time for leaders in the field to urge others of competence to embark on projects as did Dr. Mathews many years ago. (Continued on following page)

An Interview

Coincident with the publication of Dr. Mathews' book, *RIFLEMAN* Editor Walter J. Howe interviewed Dr. Mathews in the Chemistry Building on the campus of the University of Wisconsin in Madison. A report of some of Dr. Mathews' thinking on a variety of matters relating to firearms, shooting, and law is carried in what follows.

Howe: *Have you had a general interest in guns and shooting all your life?*

Mathews: While I did quite a bit of shooting when I was a boy, I gave it up because I lost all desire to kill things. I got into firearms identification work by accident. In 1923 some parts of a bomb were brought to me and the authorities wanted to know if I could tell by chemical analysis whether these parts came from the same piece of metal. I explained that we ought to make a metallographic examination, which we did, and subsequently we solved the case in that way. That case received much publicity. Then, some months later, I was consulted on a shooting that took place near Appleton, Wis. A man had been shot with a rifle and the bullet, lodged in a river bank, was dug out and brought to me. I explained that I was not a firearms expert but that there was one in New York City, and that his fee was \$100 a day and expenses. They were not prepared to pay that much and asked me to see what I could do. I went ahead, and as a result of my work the killer confessed during the course of the trial. After that, cases commenced to come to me and I realized that I would have to get some better equipment, which I did.

Howe: *And then you started applying your scientific background towards criminalistic work?*

Mathews: Yes. Of course, I was experienced in physico-chemical measurements and the use of instruments of all kinds—microscopes, spectroscopes—of the scientific nature.

Howe: *Why did you write this book?*

Mathews: I had been collecting information on rifling characteristics which I thought ought to be made available to those who are responsible for the examination of firearms.

Howe: *Is this book directed towards any group in particular?*

Mathews: My first thought, when I started to work, was to collect informa-

tion on rifling characteristics and publish that as a series of articles. Then, as I went along, I saw an opportunity to take photographs of these guns and so I started photographing them. Soon I realized that I was compiling so much information that I had better widen my views somewhat and publish a book. I hope that the information which is given on rifling characteristics and other matters will be of use to those who are engaged in firearms identification. The photographs in Volume II will be very useful to collectors everywhere who want information on unusual guns. And the chapter which I have headed "Miscellaneous Information on Automatic Pistols", I am sure will not be found in print anywhere.

Howe: *Can your book take an aspiring firearms identification man step by step into such work?*

Mathews: My book does not include information on powder marks or many matters of that sort, because I didn't have time to include everything that might be of use to a man going in the field of firearms identification. It's largely a research and reference publication rather than a manual.

Howe: *Although one can gather information about any type of firearms identification basically from reading the book, it is conspicuous that you exclude shoulder arms. What is the reason for this?*

Mathews: Because life is too short. I just didn't have time to do the rifles. I did put in some information, of course, on the specifications for rifles in the appendix. And, of course, the principles of identification of cartridges and bullets are the same, whether the arm is a handgun or a rifle.

Howe: *The expression 'forensic ballistics' has been widely used although incorrectly. Do you prefer any other term?*

Mathews: Firearms identification would be a very much better name for it because that's what it is. 'Forensic ballistics' was the expression coined by the late Calvin Goddard. Later he regretted that he had coined it.

Howe: *Could your book be used as a guide for properly equipping and operating a firearms identification lab?*

Mathews: No. This book wasn't written with that idea in mind at all.

Howe: *With reference to the instruments you picture and describe in your book, do you think these instruments should be part of a properly equipped firearms identification lab?*

Mathews: Well, some of them certainly should be. I wouldn't think that the rifling meter would be—it's a research instrument. I see no reason why a police department would need one of them. As long as the identification man can have the information which is obtained from the rifling meter, that's what he really needs. As far as the comparison camera is concerned, I would say yes. It is an exceedingly useful instrument.

Howe: *Why does the comparison microscope seem to be almost universally used in firearms identification work and the camera, very little—that is, among police departments? From reading your book, it is evident that you favor the comparison camera.*

Mathews: The microscope is on the market and the comparison camera is not.

Howe: *What do you regard as the advantages of the comparison camera?*

Mathews: With the comparison camera you see on the ground glass what appears to be the complete bullet. With the usual comparison microscope you see only a portion of each bullet. I think the comparison camera has a great advantage as far as court use is concerned. I like to use lantern slides in court, as well as photographs.

Howe: *This gets into what we both know is a field for lively discussion among firearms identification experts—that is, the advisability of using photographs and slides in court. A majority of practitioners today believe that no photographs should be introduced voluntarily. At most you bring in the microscope if somebody insists. Otherwise, because of the distraction of passing photos among jurors and because the introduction of any photographic evidence is often subject to controversy, photos should be avoided. What are your comments on this thinking?*

Mathews: Well, I realize that I'm in the minority. I believe that the photographs should be introduced in court. I think they should be required. Some of the arguments are that it takes too much time to prepare the photographs, that the photographs are not too good, that bullets are often damaged and out of shape. Also that the photographs themselves give the defense attorney additional things to talk about, such as exposure, lighting, and similar details. I've always used photographs in court and I have generally used lantern slides which are made from the same negatives as the photographic enlargements and I explain that for each one of the pictures that I am showing on the

even there is a duplicate which can be examined later in the jury room. They are all identified, of course, by court members. And that enables me to talk about each individual picture to all of the jurymen and the judge and the lawyer. Of course, if you have only a series of photographs, as they are distributed among the members of the jury, one juror will be looking at one picture and another juror will be looking at a different one, and none of the jurors will be listening to what you are saying.

Howe: In spite of the known disadvantages, and the fact that few firearms identification men use photographic evidence, you still lean towards the use of photographic evidence?

Mathews: I think so, yes. Otherwise it's just one man's word. The expert—I don't know if he is an expert or not, I'll use expert as a word with quotation marks around it—will say, "Yes, I examined these bullets. That bullet was fired from this gun." Well, that to me is not satisfactory.

Howe: Regarding firearms identification men working in law-enforcement work, there are divided opinions. Some believe the man should first be a policeman and then work into firearms identification. Others recommend hiring a civilian qualified by scientific education. What are your recommendations?

Mathews: I believe that a firearms identification man should be a graduate

of California or Michigan, or one of the several other schools where police work is taught. I am utterly opposed to taking a policeman, no matter how good a record he may have had as an ordinary policeman, and putting him in a laboratory and saying, "Now, you are a firearms expert." You don't make a firearms expert by telling a man he is one.

Howe: I agree with your thinking that the candidate should have adequate formal training, with emphasis on the sciences. However, not much in the way of academic preparation can be demanded in view of some of the salaries offered in this field. For example, Philadelphia recently advertised for a firearms identification man and the salary range was \$5877 to \$7053, with a new employee being given only the lower figure.

Mathews: That's the big difficulty, and we have had that problem in a number of crime laboratories—not paying the men a salary sufficient to keep them. One of the problems is that crime laboratory pay today is based essentially on working policemen's wage scale and it hasn't been amended to take into account the demand for scientific personnel with a degree.

Howe: Very often a city, county, or state lawmaker will introduce a bill requiring that each person should bring his guns to a central place where a

bullets will be put in file. Then, at a later time, if a crime with a firearm occurs in that area, the officials go to this file of bullets and see if they have some file bullet to compare against their evidence specimen. Do you have any comment on this proposal which is offered again and again, year after year?

Mathews: I would say it is utter nonsense.

Howe: Would you expand on your answer a little more, in terms of your experience?

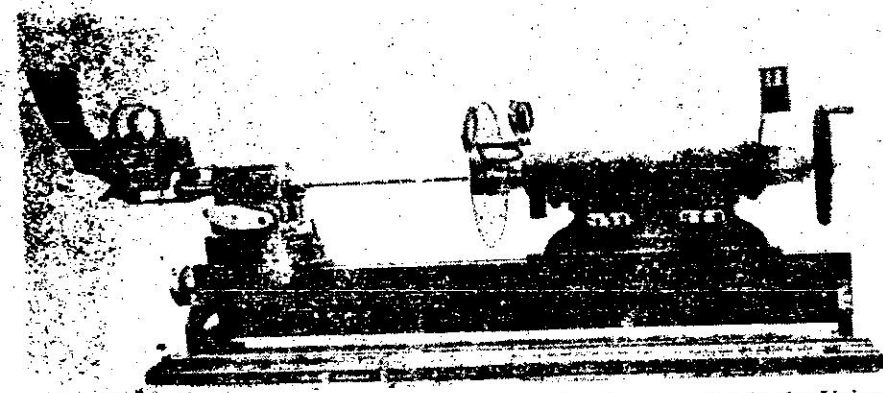
Mathews: In the first place, lead bullets and copper bullets will oxidize so that over a period of years they will be of lessening value for comparison purposes. Another thing is that the rifling characteristics in a gun gradually change from use and abuse. Most important, there is no known method of classifying the accidental characteristics of bullets. The last, I believe, is one of the things frequently overlooked. People think you can classify the accidental marks on bullets in the same way you can classify fingerprints. But you and I and other people familiar with the field know that no such system exists.

Howe: What are your views on firearms laws in general? Each year new laws are introduced—registration, dealer control, etc.—in the belief that they will stop crime. You've had experiences as a police commission board member and a criminalist.

Mathews: I think it stops crime just the same as it did in New York where they have the Sullivan Law. In short, the crooks will have the guns and the honest people won't.

Howe: The statement has been made that when a man is accused of murder and firearms evidence is involved, the accused has the weight of the state's resources against him in that the state has a firearms identification man. The accused has a very small chance of getting a really competent private expert to testify for him. It is hard to find a competent man to testify for the defense. Do you have any thoughts on that?

Mathews: That is true; there is no question of it. When I am supposed to testify for the defense, I always have some qualms because I more or less take it for granted that the state expert is probably right. I think there should be a place where competent experts could be hired for the defense. As a matter of fact, the state laboratories should function equally—and perhaps in some instances they do—for the defense and for the state. ■



The rifling meter used by Dr. Mathews was designed and constructed in the University of Wisconsin shop. This is a research instrument rather than a day-to-day tool of the firearms identification laboratory. The rifling meter is used to accurately measure the pitch of rifling in a gun barrel. A lead disk (pre-cut by a punch to a proper size for the caliber) is forced through the barrel by turning the handwheel (extreme right). Readings of rotation are taken and converted to pitch measurement, which is expressed as a complete turn of rifling in a given number of inches.

After being pushed through the bore the 'marked' lead disk can be placed under a specially fitted microscope and reasonably useful rifling impression measurements taken by observation.

These techniques were employed extensively by Dr. Mathews in compiling much of the tabular material that appears in Volume I of his new work.

