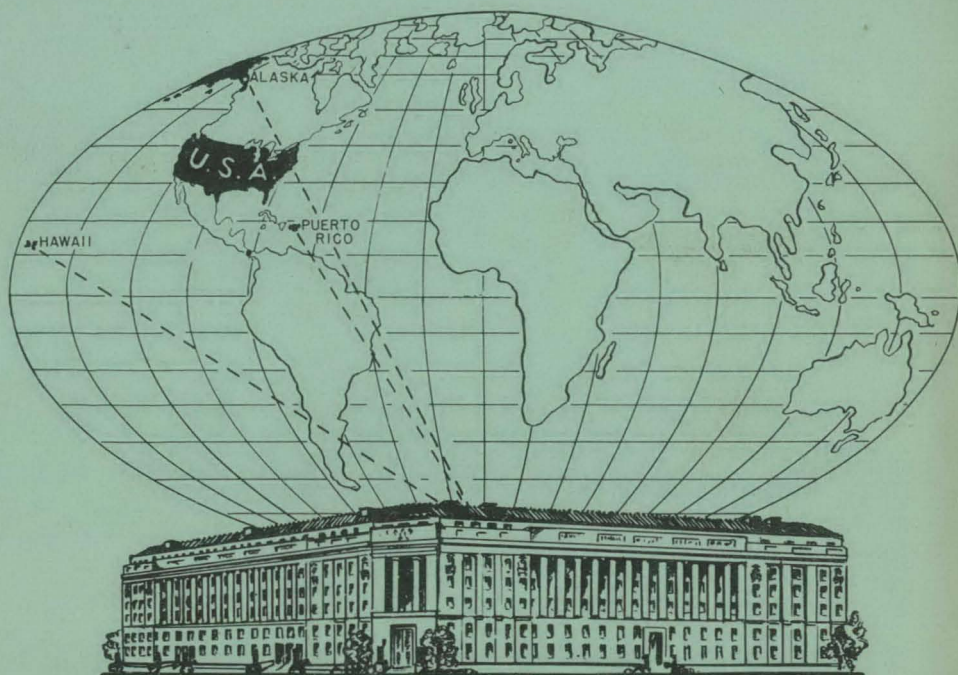


# FBI LAW ENFORCEMENT BULLETIN

1944

January-February

Vol. 13



HEADQUARTERS OF THE FBI,  
DEPARTMENT OF JUSTICE BUILDING,  
WASHINGTON, D.C.

No. 1

Federal Bureau Of Investigation  
United States Department Of Justice  
*John Edgar Hoover, Director*



The Federal Bureau of Investigation, United States Department of Justice, is charged with the duty of investigating violations of the laws of the United States and collecting evidence in cases in which the United States is or may be a party in interest.

The following list indicates some of the major violations over which the Bureau has investigative jurisdiction:

- Espionage, Sabotage, Violations of the Neutrality Act and similar matters related to Internal Security
- National Motor Vehicle Theft Act
- Interstate transportation of stolen property valued at \$5,000 or more
- National Bankruptcy Act
- Interstate flight to avoid prosecution or testifying in certain cases
- White Slave Traffic Act
- Impersonation of Government Officials
- Larceny of Goods in Interstate Commerce
- Killing or Assaulting Federal Officer
- Cases involving transportation in interstate or foreign commerce of any persons who have been kidnaped
- Extortion cases where mail is used to transmit threats of violence to persons or property; also cases where interstate commerce is an element and the means of communication is by telegram, telephone or other carrier
- Theft, Embezzlement or Illegal Possession of Government Property
- Antitrust Laws
- Robbery of National Banks, insured banks of the Federal Deposit Insurance Corporation, Member Banks of the Federal Reserve System and Federal Loan and Savings Institutions
- National Bank and Federal Reserve Act Violations, such as embezzlement, abstraction or misapplication of funds
- Crimes on any kind of Government reservation, including Indian Reservations or in any Government building or other Government property
- Neutrality violations, including the shipment of arms to friendly nations
- Frauds against the Government
- Crimes in connection with the Federal Penal and Correctional Institutions
- Perjury, embezzlement, or bribery in connection with Federal Statutes or officials
- Crimes on the high seas
- Federal Anti-Racketeering Statute
- The location of persons who are fugitives from justice by reason of violations of the Federal Laws over which the Bureau has jurisdiction, of escaped Federal prisoners, and parole and probation violators.

The Bureau does not have investigative jurisdiction over the violations of Counterfeiting, Narcotic, Customs, Immigration, or Postal Laws, except where the mail is used to extort something of value under threat of violence.

Law enforcement officials possessing information concerning violations over which the Bureau has investigative jurisdiction are requested to promptly forward the same to the Special Agent in Charge of the nearest field division of the Federal Bureau of Investigation, United States Department of Justice. The address of each field division of this Bureau appears on the inside back cover of this bulletin. Government Rate Collect telegrams or telephone calls will be accepted if information indicates that immediate action is necessary.



FBI  
LAW ENFORCEMENT  
BULLETIN

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NO. 1

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The FBI Law Enforcement Bulletin is issued bimonthly to law enforcement agencies throughout the United States. Much of the data appearing herein are of a confidential nature and its circulation should be restricted to law enforcement officers; therefore, material contained in this Bulletin may not be reprinted without prior authorization by the Federal Bureau of Investigation.

The FBI LAW ENFORCEMENT BULLETIN is published by the Federal Bureau of Investigation, United States Department of Justice bimonthly. Its material is compiled for the assistance of all Law Enforcement Officials and is a current catalogue of continuous reference for the Law Enforcement Officers of the Nation.



**John Edgar Hoover, Director  
Federal Bureau of Investigation  
United States Department of Justice  
Washington, D. C.**

**I N T R O D U C T I O N**

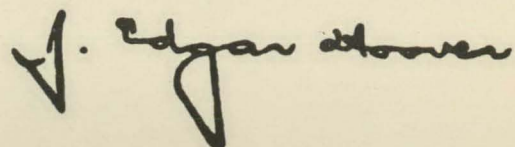
**1944's CHALLENGE**

Looking back upon two years of war, law enforcement finds many reasons for genuine pride in its accomplishments. Though hampered by insufficient personnel and harried by ever increasing demands upon their resources, the agencies entrusted with the nation's internal welfare have discharged their tasks with credit. We of the FBI have known the zeal and devotion to duty of police officers throughout the nation; we have found, on every side, evidence of their steadfast purpose to preserve intact the peace and security of American lives, homes, and property.

There has not been, even in the midst of total and global warfare, a single instance of foreign-inspired sabotage in the United States. Espionage rings have been smashed and spies have been sent to prison. Thousands of dangerous enemy aliens have been interned for the duration of the war. Hundreds of thousands of investigations have been conducted in the enforcement of the Selective Service Act. All these things have been accomplished through the willing cooperation of all law enforcement agencies, in addition to the great weight of peacetime duties that demand their constant attention.

As we enter upon the third year of war, the challenge to law enforcement is multiplied by the very success achieved thus far. Men everywhere are talking of victory and of peace; there is a growing belief that the war is virtually won and that success is inevitable. It is precisely in that hope of early victory that the forces of law and order may find a new and greater challenge: the danger of overconfidence. 1944 may bring the defeat of our enemies and the end of war; that is the prayer of every American. But between the present and the peace there lie many dangers to be met and many battles to be won, not only in the theaters of war, but at home as well. The final, desperate attempts of the enemy to stem the tide of defeat will undoubtedly demand a greater vigilance and even more sacrifices on the part of law enforcement.

On behalf of the people of America, I want to congratulate the police officers of the nation upon a job magnificently done. It will be necessary for them to increase their efforts in 1944, in order that America may remain secure and free until the day of final victory.

A handwritten signature in dark ink, reading "J. Edgar Hoover". The signature is fluid and cursive, with a large, stylized "J" and "H".

**Director**



# FEDERAL BUREAU OF INVESTIGATION UNITED STATES DEPARTMENT OF JUSTICE



*John Edgar Hoover, Director*



## THE FBI PLEDGE FOR LAW ENFORCEMENT OFFICERS

HUMBLY RECOGNIZING THE RESPONSIBILITIES ENTRUSTED TO ME, I DO VOW THAT I SHALL ALWAYS CONSIDER THE HIGH CALLING OF LAW ENFORCEMENT TO BE AN HONORABLE PROFESSION, THE DUTIES OF WHICH ARE RECOGNIZED BY ME AS BOTH AN ART AND A SCIENCE. I RECOGNIZE FULLY MY RESPONSIBILITIES TO DEFEND THE RIGHT, TO PROTECT THE WEAK, TO AID THE DISTRESSED, AND TO UPHOLD THE LAW IN PUBLIC DUTY AND IN PRIVATE LIVING. I ACCEPT THE OBLIGATION IN CONNECTION WITH MY ASSIGNMENTS TO REPORT FACTS AND TO TESTIFY WITHOUT BIAS OR DISPLAY OF EMOTION, AND TO CONSIDER THE INFORMATION, COMING TO MY KNOWLEDGE BY VIRTUE OF MY POSITION, AS A SACRED TRUST, TO BE USED SOLELY FOR OFFICIAL PURPOSES. TO THE RESPONSIBILITIES ENTRUSTED TO ME OF SEEKING TO PREVENT CRIME, OF FINDING THE FACTS OF LAW VIOLATIONS AND OF APPREHENDING FUGITIVES AND CRIMINALS, I SHALL GIVE MY LOYAL AND FAITHFUL ATTENTION AND SHALL ALWAYS BE EQUALLY ALERT IN STRIVING TO ACQUIT THE INNOCENT AND TO CONVICT THE GUILTY. IN THE PERFORMANCE OF MY DUTIES AND ASSIGNMENTS, I SHALL NOT ENGAGE IN UNLAWFUL AND UNETHICAL PRACTICES BUT SHALL PERFORM THE FUNCTIONS OF MY OFFICE WITHOUT FEAR, WITHOUT FAVOR, AND WITHOUT PREJUDICE. AT NO TIME SHALL I DISCLOSE TO AN UNAUTHORIZED PERSON ANY FACT, TESTIMONY, OR INFORMATION IN ANY PENDING MATTER COMING TO MY OFFICIAL KNOWLEDGE WHICH MAY BE CALCULATED TO PREJUDICE THE MINDS OF EXISTING OR PROSPECTIVE JUDICIAL BODIES EITHER TO FAVOR OR TO DISFAVOR ANY PERSON OR ISSUE. WHILE OCCUPYING THE STATUS OF A LAW ENFORCEMENT OFFICER OR AT ANY OTHER TIME SUBSEQUENT THERETO, I SHALL NOT SEEK TO BENEFIT PERSONALLY BECAUSE OF MY KNOWLEDGE OF ANY CONFIDENTIAL MATTER WHICH HAS COME TO MY ATTENTION. I AM AWARE OF THE SERIOUS RESPONSIBILITIES OF MY OFFICE AND IN THE PERFORMANCE OF MY DUTIES I SHALL, AS A MINISTER, SEEK TO SUPPLY COMFORT, ADVICE AND AID TO THOSE WHO MAY BE IN NEED OF SUCH BENEFITS; AS A SOLDIER, I SHALL WAGE VIGOROUS WARFARE AGAINST THE ENEMIES OF MY COUNTRY, OF ITS LAWS, AND OF ITS PRINCIPLES; AND AS A PHYSICIAN, I SHALL SEEK TO ELIMINATE THE CRIMINAL PARASITE WHICH PREYS UPON OUR SOCIAL ORDER AND TO STRENGTHEN THE LAWFUL PROCESSES OF OUR BODY POLITIC. I SHALL STRIVE TO BE BOTH A TEACHER AND A PUPIL IN THE ART AND SCIENCE OF LAW ENFORCEMENT. AS A LAWYER, I SHALL ACQUIRE DUE KNOWLEDGE OF THE LAWS OF MY DOMAIN AND SEEK TO PRESERVE AND MAINTAIN THE MAJESTY AND DIGNITY OF THE LAW; AS A SCIENTIST IT WILL BE MY ENDEAVOR TO LEARN ALL PERTINENT TRUTH ABOUT ACCUSATIONS AND COMPLAINTS WHICH COME TO MY LAWFUL KNOWLEDGE; AS AN ARTIST, I SHALL SEEK TO USE MY SKILL FOR THE PURPOSE OF MAKING EACH ASSIGNMENT A MASTERPIECE; AS A NEIGHBOR, I SHALL BEAR AN ATTITUDE OF TRUE FRIENDSHIP AND COURTEOUS RESPECT TO ALL CITIZENS; AND AS AN OFFICER, I SHALL ALWAYS BE LOYAL TO MY DUTY, MY ORGANIZATION, AND MY COUNTRY. I WILL SUPPORT AND DEFEND THE CONSTITUTION OF THE UNITED STATES AGAINST ALL ENEMIES, FOREIGN AND DOMESTIC; I WILL BEAR TRUE FAITH AND ALLEGIANCE TO THE SAME, AND WILL CONSTANTLY STRIVE TO COOPERATE WITH AND PROMOTE COOPERATION BETWEEN ALL REGULARLY CONSTITUTED LAW ENFORCEMENT AGENCIES AND OFFICERS IN THE PERFORMANCE OF DUTIES OF MUTUAL INTEREST AND OBLIGATION.





## THE RELATIONSHIP OF THE NEWSPAPER PROFESSION AND LAW ENFORCEMENT

by  
Matt E. Elder\*

This subject is of interest to all of you because if proper relations exist between the press and law enforcement bodies, the jobs of both are made easier and more efficient in combatting crime.

To you Oklahoma peace officers, invited here by the Federal Bureau of Investigation, I can truly say that newspapers today look to the profession of law enforcement - as never before - to maintain the internal security of our State and Nation.

That there are weaknesses in law enforcement we must acknowledge. That mistakes occur is inevitable. That judgment can be wrong is human. And that newspapers share this tremendous responsibility and obligation we all know. Communities involuntarily look to their newspaper for leadership. The newspaper provides the channel through which constructive leadership can be impressed on the community for its upbuilding and progress.

The newspaper man knows, or at least he should know his community better than anyone else, including officers. In constant touch with all parts of his city and with all kinds of people he is the logical man to point out the way to better things.

An alert, enterprising and courageous press is an essential safeguard to every community against organized as well as unorganized underworlds. Through the columns of the newspaper the public can be kept continuously informed of conditions. When the administration of criminal justice falls into bad hands, the press oftentimes is the only medium to expose conditions as they exist.

Once corruption and the extent of criminal organization have been brought to light, experience has proved that the public, thus informed, will succeed in coping with the problem.

\*Mr. Matt E. Elder is the National Advertising Manager for the Tulsa World and Tribune, Tulsa, Oklahoma. At a Quarterly Police Conference held at Tulsa, Oklahoma, Mr. Elder delivered this address and subsequently he very kindly consented to have it reprinted in this Bulletin so that all police officials might have the benefit of his splendid remarks.



This is perhaps the greatest function which the press can perform in the field of law enforcement. In city after city we have seen editors and publishers risk libel, intimidation and even threats of personal violence as they tore the lid off organized crime and other pernicious practices in their communities. Of course, the fact that the condition existed at all was, to some extent, a reflection either upon the alertness or influence of the press. But the final exposures gave courage to the respectable citizens of the community who in turn united and obtained effective action. This job, when taken on by newspapers, is not an easy one.

The greatest obstacles usually are public lethargy and a failure to recognize the true proportions of organized crime and its danger and cost to the community. The public too frequently recognizes only the casual or obvious crime - the murder, the burglary, the assault or the robbery - and overlooks the ever-growing hold which criminal combines gain. Boasting no political protection or great funds, the casual criminal for the most part can be dealt with adequately by law enforcement agencies. Yet the public still thinks of crime largely in terms of such individual marauders. Newspapers too often fall into the same error. It is thus easy for corrupt or indifferent officials to build up a record by triumphs over small fry and thereby cover their failure to handle the difficult problems.

Organized crime can exist only in comparative obscurity. The important directors of criminal combinations shun the press like the plague. Capone became too famous - and I use that word advisedly - for his own good. He became so famous - or infamous - that, Chicago failing to do the job, the Federal government went out and did it.

"Dutch" Shultz in New York rather enjoyed his newspaper publicity and that was a great mistake. He became "hot." His activities publicized the breakdown in the administration of justice. He was a menace to the whole system of organized crime. The result was inevitable. By agreement he was eliminated by his former partners.

The secrecy with which organized crime operates lulls the community into a false sense of security. The public views the ostensible absence of crimes with satisfaction, not realizing that the very absence of a crime wave may indicate that racketeers have gained a firm hold on the community. By contrast the public is also inclined to take comfort from the absence of gang murders. The assumption is that this means that racketeering has disappeared. Actually it may mean that those in control of the city's underworld are so powerful that no one dares rise up against them. In recent years the press decided to step in.

Organized crime cannot stand the light of day. The powerful exposure to public opinion, which the press made possible, soon had its effect. Newspapers gave liberal attention to good jobs when they were done, as well as to bad conditions. The lethargy and self-satisfaction of the public vanished. Incompetent or corrupt officials in many cities were driven from office and replaced by men of integrity, vigor and courage.



But even now the press cannot sit back. The business of keeping our communities decent places to live in is one that will never be completed. A free and courageous press can and must be the community's eyes and ears, ready to step forward and warn the public of any new danger. That however is not the only function the press can perform in the field of law enforcement. It can and does help in other ways. The importance of cooperation between newspaper workers and law enforcement agencies and officers cannot be over-emphasized.

Most newspapers have ceased glorifying the criminal realizing that misplaced sympathy made him the idol of imaginative youths and embarrassed the efforts of law enforcement officials attempting to do their job.

Another contribution the press is making in the administration of justice is simple care in handling news. If a crime story is overplayed it generally is overplayed for the benefit of law enforcement.

Newspaper men will cooperate with you officers. Needless to say there is not a single officer present who does not confide in some reporter. This confidence is very seldom misplaced. Occasionally a newspaper will come across information revealing the existence of a police investigation either by chance or through the hard work of a reporter. To print a story at the time might very well completely ruin the chances of a successful prosecution. For every newspaper that is more interested in scooping a rival by printing such a story I can mention a hundred who would willingly forego such a pleasure in behalf of making another contribution to law enforcement.

I feel that one of the gravest responsibilities of the press is that of keeping a vigil over the law enforcement agencies. There are some who complain that newspapers print too much crime news but with that I thoroughly disagree. Crime is news and the people are entitled to know the extent of crime in their community. They are also entitled to know what their officials are doing about criminals. They can get that information only through their newspapers.

Consequently, a free press can be of real service for the community by watching law enforcement agencies and seeing that they are administered in an efficient and non-political manner. By properly presenting the problems to the citizens of their communities, the newspapers can do much to assure the election of honest, hard-working prosecutors, judges, police commissioners, police chiefs, and sheriffs.

At no time perhaps has it been more important that the people have confidence in the administration of criminal justice. It is essential that our law enforcement agencies provide constant living proof that here in America, in the handling of our governmental affairs, we can be both efficient and free.



## FIREARMS TRAINING

No part of the training of a police officer is more important than that part devoted to firearms training. The officer's life, as well as the lives of his fellow officers, might depend some day entirely upon the officer's skill with a revolver, machine gun, or shot gun.

An Agent entering on duty in the FBI immediately goes into a training class of fourteen weeks. A very vital part of his course of study is "Firearms Training." He must not only learn to shoot expertly the .30 caliber rifle, autoloading and automatic shotgun, .45 caliber Thompson Submachine Gun, gas gun, and .38 caliber "Official Police" Colt revolver, but he must study and learn the nomenclature of these guns. He must learn to take them apart for cleaning purposes and be able to put them back together again without assistance. He must know the individual parts of each gun and their particular function.

Before an Agent is allowed to shoot on the range he is given a course in "Sight Alignment," and "Dry Firing." And this training pays great dividends. From January 1, 1933, through December 31, 1943, twenty-five criminals were killed by Agents of the FBI, and during that same period of time nine FBI Agents lost their lives in gun battles with murdering criminals.

Firearms training is more than mere marksmanship. It includes a thorough knowledge of the guns to be used; their component parts, their power, their range, et cetera. The more knowledge a police officer has concerning the gun he carries with him, the greater respect he has for that gun and its danger, and such respect lessens the possibility of unnecessary accidents to himself or others.

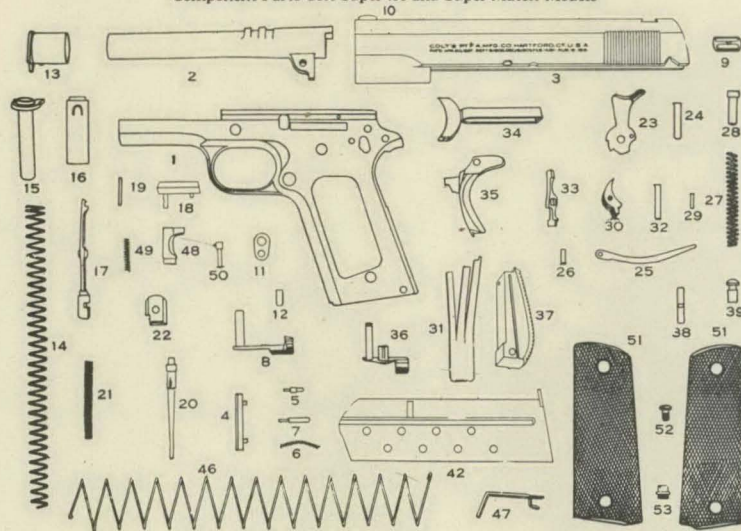
Feeling that all police officers are vitally interested in the subject of firearms training the FBI is publishing a series of photographs in this and subsequent issues of the FBI Law Enforcement Bulletin showing the various parts of weapons used by the FBI, and correct and incorrect sight alignment.

The first photographs to be shown in this series include the Colt Automatic Pistol - .38 Caliber, used by many of the police agencies throughout the country, and the Thompson Submachine Gun - .45 Caliber, a very important part of most police agencies, particularly on raids. It is well that every police officer be thoroughly familiar with these two weapons.

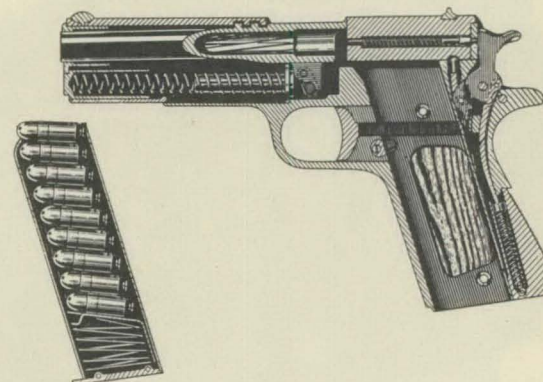


# Colt Automatic Pistol and National Match Model - - Caliber .38

Component Parts Colt Super .38 and Super Match Models



Sectional View



## Component Parts

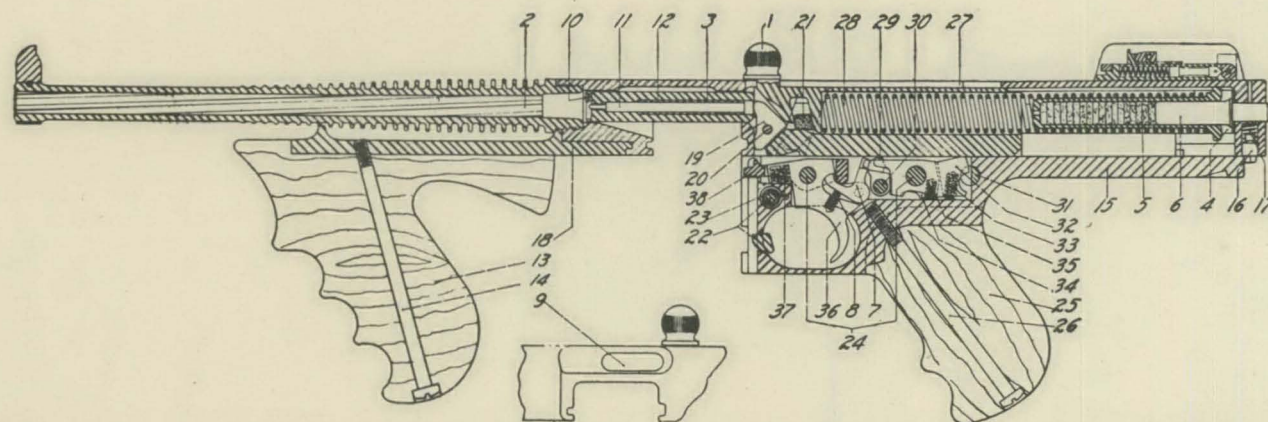
- |                        |                         |                         |                           |
|------------------------|-------------------------|-------------------------|---------------------------|
| 1 Receiver.            | 13 Barrel Bushing.      | 26 Hammer Strut Pin.    | 39 Housing Pin Retainer   |
| 2 Barrel, regular.     | 14 Recoil Spring.       | 27 Main Spring.         | 40 Lanyard Loop.          |
| Barrel, Match Type.    | 15 Recoil Spring Guide. | 28 Main Spring Cap.     | 41 Lanyard Loop Pin.      |
| 3 Slide.               | 16 Plug.                | 29 Main Spring Cap Pin. | 42 Magazine Complete.     |
| 4 Plunger Tube.        | 17 Extractor.           | 30 Sear                 | 46 Magazine Spring.       |
| 5 Slide Stop Plunger.  | 18 Ejector.             | 31 Sear Spring.         | 47 Magazine Follower.     |
| 6 Plunger Spring.      | 19 Ejector Pin.         | 32 Sear Pin.            | 48 Magazine Catch.        |
| 7 Safety Lock Plunger. | 20 Firing Pin.          | 33 Disconnector.        | 49 Magazine Catch Spring. |
| 8 Slide Stop.          | 21 Firing Pin Spring.   | 34 Trigger.             | 50 Magazine Catch Lock.   |
| 9 Rear Sight.          | 22 Firing Pin Stop.     | 35 Grip Safety.         | 51 Stocks.                |
| *10 Front Sight.       | 23 Hammer.              | 36 Safety Lock.         |                           |
| 11 Link.               | 24 Hammer Pin.          | 37 Main Spring Housing. | 52 Stock Screws           |
| 12 Link Pin.           | 25 Hammer Strut.        | 38 Housing Pin.         | 53 Screw Bushings         |

\*This part shown attached to Slide. Partridge Type Sights



# THOMPSON SUBMACHINE GUN CALIBRE .45

Sectional view of gun with bolt in closed position and locked, numbered to correspond with the numbers in the list of components.



## LIST OF COMPONENTS

### Part No.

- |  |                            |   |
|--|----------------------------|---|
| 1. Actuator.*                          | 14. Fore Grip Screw.       | 28. Recoil Spring.*                     |
| 2. Barrel.                             | 15. Frame.                 | 29. Rocker.                             |
| 3. Bolt.                               | 16. Frame Latch.           | 30. Rocker Pivot or Fire Control Lever. |
| 4. Breech Oiler (including Felt Pads). | 17. Frame Latch Spring.    | 31. Safety.                             |
| 5. Buffer (including Fiber Discs).*    | 18. Grip Mount.            | 32. Sear.                               |
| 6. Buffer Pilot.                       | 19. Hammer.                | 33. Sear Spring.                        |
| 7. Disconnecter.                       | 20. Hammer Pin.            | 34. Sear Lever.                         |
| 8. Disconnecter Spring.                | 21. Lock.                  | 35. Sear Lever Spring.                  |
| 9. Ejector.                            | 22. Magazine Catch.        | 36. Trigger.                            |
| 10. Extractor.                         | 23. Magazine Catch Spring. | 37. Trigger Spring.                     |
| 11. Firing Pin.                        | 24. Pivot Plate.           |   |
| 12. Firing Pin Spring.                 | 25. Rear Grip.             |   |
| 13. Fore Grip.                         | 26. Rear Grip Screw.       |   |
|  | 27. Receiver.              |   |
|  |                            | 38. Trip.                               |

\* These parts of model 1921 do not interchange with corresponding parts of model 1928.







## CRIME PREVENTION WORK IN OAK PARK, ILLINOIS

N.P.A. graduate Lt. Fremont P. Nester, Detective Bureau, Oak Park, Illinois, Police Department, has furnished some interesting data of steps taken by his department during the past year to curb juvenile delinquency in that City and at the same time create interest on the part of children in the war effort. Lt. Nester addressed the students of the various schools in the Oak Park district and encouraged each school room to elect officers and appoint students from their own groups to meet with the police officials at stated intervals to discuss juvenile problems confronting the Police Department.

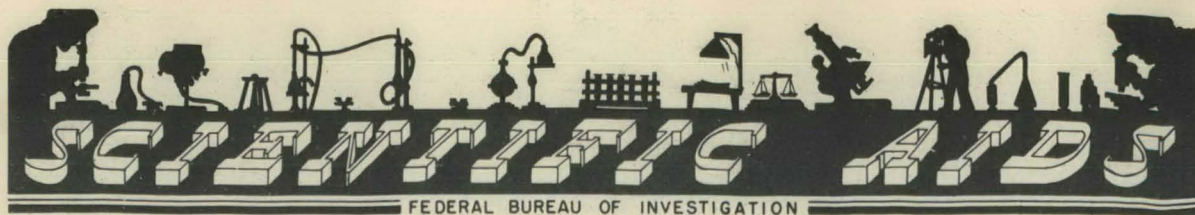
As a result, each school has a Junior Civic League to which all students belong. Representatives from each class meet in the Oak Park Council Chambers where such problems as breakage of street lights, theft of bicycles, and similar matters are discussed. At one such meeting, Lt. Nester stated a street light was taken apart to show the cost of the various parts and how much of the materials used were necessary in the building of tanks, airplanes, shells, et cetera. The representatives of the various groups returned to their respective schools where they held meetings, and made and exhibited posters reflecting how the destruction of street lights affects the war effort. In a short period of time the breakage of street lights was reduced seventy-five per cent in the Oak Park district.

On other occasions the Junior Civic League has requested police officials to address them on various matters and movies have been exhibited showing the costliness of reckless driving, speeding, drinking, and other acts of delinquency. As a result of Lt. Nester's work over 800 students have signed the following pledge:

"We, the undersigned students of Oak Park and River Forest Township schools, do hereby solemnly swear that we will not destroy maliciously or unlawfully any public or private property, and will urge our fellow students and friends to follow our example."

Chief of Police Benjamin Barsema and the officers of the Oak Park Police Department are to be congratulated for the steps they have taken to curb juvenile delinquency in their community. Today as never before it is imperative that police chiefs throughout the Nation realize the necessity of taking some definite steps to either set up a crime prevention bureau, or to take some active part in supervising juveniles in their communities in order to curb delinquency tendencies.





## THE PHYSICAL DETECTION OF INKS OF DIFFERENT COMPOSITIONS<sup>1</sup>

In the work of Document Examination as it relates to the field of criminal investigation, it is often necessary to ascertain if two figures, letters, or entire documents which look alike have been written with inks of the same or different compositions. The problem is complicated in that only a very limited amount of ink is available for examination or analysis, that the document must not be altered or damaged in any manner and further, that it is highly desirable for the examination to be so conducted in such a manner that the examiner will have some visible evidence in the form of photographs or enlargements with which to substantiate his conclusions before the court and jury.

The problem has two main avenues of approach; the chemical and microchemical methods of analysis as outlined by Mitchell<sup>2</sup>, and the physical method of examination with which this treatise is concerned. The latter is the more advantageous since the document is not altered even to the slightest extent and photographic enlargements may be prepared to aid the examiner in his testimony in the subsequent court proceedings.

The chemical and microchemical analysis of ink have been discussed by C. Ainsworth Mitchell<sup>3</sup>. By means of a capillary pipette, he places a drop of an aqueous reagent upon the questioned ink stroke and notes the resulting chemical or physical reaction. The observation which he then records--depending upon the reacting substances--is a complete decolorization, a change of color, or the diffusion of the ink with the drop of the reagent. This procedure is carried out, and the color reactions observed, under a compound microscope. Mitchell lists a large number of suitable reagents for this type of examination and their color reactions with various inks. Mr. Albert S. Osborn<sup>4</sup> would modify this examination by using a comparison microscope and examining both ink specimens under one field of view and noting the differences of reactions between the two. Such chemical

<sup>1</sup> A review of the literature subsequent to experimental research on the Physical Separation of Ink Strokes.

<sup>2</sup> C. Ainsworth Mitchell, "Inks, Their Composition and Manufacture"; Charles Griffin & Co., Limited, London, 1937.

<sup>3</sup> Ibid.

<sup>4</sup> Albert S. Osborn, "Questioned Documents"; Boyd Printing Company, Albany, New York, 1929.



treatment cannot always be applied. This method has other limitations, but further discussion on the chemical approach to the problem would not be justified in this paper. It is always necessary to run simultaneous control tests. The remainder of this treatise will be confined to a resume of the physical method of separation of ink strokes.

The physical separation of ink strokes is accomplished by two general methods; optical or visual inspection and photography. Those separations which result from photography or those optical examinations which may be photographed are, of course, the most desirable in the work of criminal investigation.

One of the most useful instruments available to the FBI Laboratory in the examination of ink strokes is the low-power binocular microscope. Not only is the instrument of extreme importance in the study of "line quality" and other evidences of alteration and fraud in ink writings, but it is utilized in the detection of differences of color or shades of ink strokes which appear alike to the unaided eye. The problem which the criminal has in matching perfectly the color of an ink stroke on a document is really a very difficult one and rarely indeed is it possible to match two colors so as to escape detection from a microscopic examination. Of the inks manufactured in this country only a very few match perfectly when viewed under a microscope.

Frequently, however, cases are examined where two inks of different compositions are so much alike in color as to escape ordinary visual detection. In these instances advantage must be taken of the fact that the color of an ink is a function not only of the light with which it is illuminated but also of the chemical composition of the ink itself, that is, of the pigments which are used in its manufacture.

Since the color of an ink stroke is dependent upon the light which falls upon it, it might seem reasonable to assume that various colors of such strokes could be separated by controlling the light source. In other words, if two blue-black inks were visually alike when viewed under "white light," it might be possible to detect a difference between them, or in the terminology of this paper, to separate them by examination under a source of infrared, red, orange, green, blue, violet, or ultra-violet light. In many cases this assumption is true, that is, the ink pigments vary in the colors and strength which they reflect when exposed to these various radiations.

If a beam of white light is passed through a prism to a white screen, its general direction is changed and the beam itself becomes spread out to form a band of rainbow colors. It might be said that the white light had been separated into its component colors. It would be noted that the band was composed of violet, blue, blue green, yellow green, yellow, orange, and red light, and further that the brightest part of the band was in the region of the yellow green. It would be further noted that the two ends of the color band, that is, the violet and the red were very dull and appeared to fade into darkness. This merely means that the eye is more



sensitive to the yellow green light than it is to the red or violet. This does not mean that the white light is composed of only that part which is noted on the screen. There is a great band of color on both sides of the visible red and violet. The light or radiations on the invisible side of the violet are known as the ultra-violet; those on the invisible side of the red are called infrared. Both of these radiations are useful in effecting a separation or differentiation of various colors of ink strokes.

Infrared rays have great penetrating power; hence their use in photography for taking photographs through fog. This same property of these rays accounts for their utility in the photographing of obliterated writing. The usefulness of infrared in the separation of ink strokes is based upon the observation that organic dyes are practically transparent to the infrared; whereas the pigment inks are opaque and reflect the infrared radiations thus making it possible to effect a positive separation of two ink strokes which are visually alike but different chemically, that is, if one is an organic dye and the other a pigment ink. Dr. M. De Loet<sup>5</sup> and M. Charlier<sup>5</sup> in June, 1937, published an article dealing with the use of infrared in the separation of ink strokes in which they set forth some results obtained in their research on the subject. The procedure followed is quite simple. The ink strokes are merely photographed using a source of infrared such as the carbon arc, an infrared filter over the camera lens and an infrared plate. Walter Clark<sup>6</sup> has recently written a book on infrared photography in which may be found a discussion of the various filters, plates, and light sources available for this work.

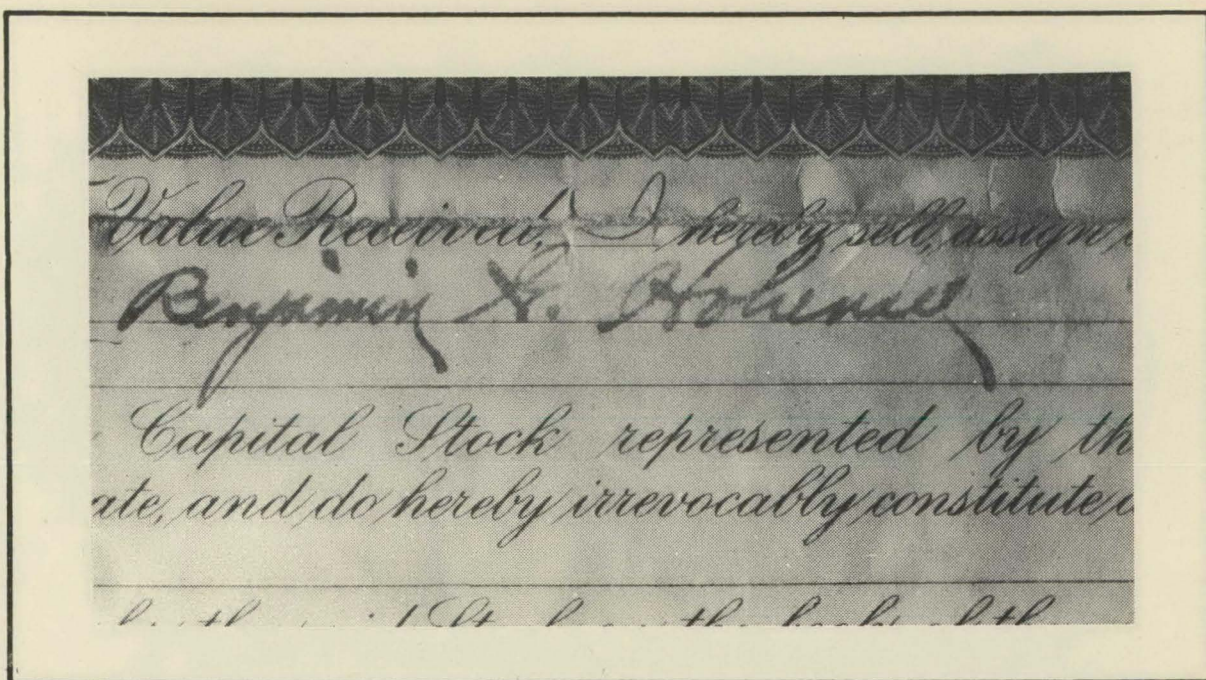
The ultra-violet light also has great penetrating power; however, its great utility in the problem at hand comes from the phenomenon known as fluorescence. All substances absorb light, usually over a characteristic range of wave-lengths and many retain and then re-emit such radiations. When some substances are placed under a source of ultra-violet light, they absorb these invisible radiations and re-emit visible light. If the ultra-violet light is screened by a filter, the re-emitted visible light may be observed and photographed. Usually the document is examined in a dark room under a source of ultra-violet light such as the quartz mercury vapor lamp. If any visible fluorescence is noted, then these radiations are photographed using an appropriate filter to screen out the ultra-violet light to which the photographic film would be sensitive. The filter chosen should have as nearly as possible the same transmission as the reflected light, but permitting no transmission in the ultra-violet region. If two inks under examination are different in chemical composition, but appear alike to the eye, it may be possible to effect a separation by means of ultra-violet light, if one ink re-emits visible light and the other does not, or if there is a difference in the color of the re-emitted light.

In addition to the phenomenon of fluorescence and its use in the separation of ink strokes, there is another method using ultra-violet light in the solution of the instant problem. Two inks which are visually

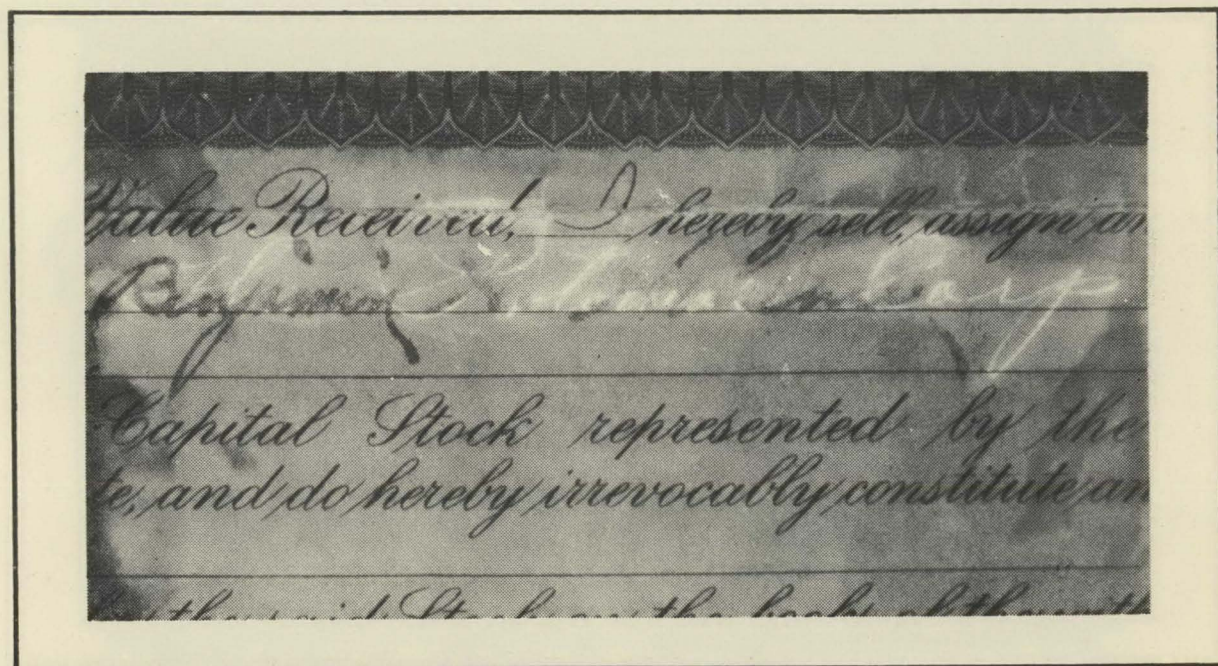
<sup>5</sup> Dr. M. De Loet and M. Charlier, "Revue de Droit Penal et de Criminologie," June, 1937.

<sup>6</sup> Walter Clark "Photography by Infrared"; John Wiley and Sons, Inc., New York, 1939.





Photograph taken in ordinary light



Photograph taken in ultra-violet light



of the same color may vary in the degree to which they reflect ultra-violet light. To record this difference only the ultra-violet light must be photographed. The document is usually photographed in a dark room under a source of ultra-violet light such as a mercury vapor lamp enclosed in a lamp house with a window consisting of a filter passing only ultra-violet light, and in order to allow the maximum amount of ultra-violet radiation to effect the photographic plate, a quartz lens is used instead of the ordinary glass lens of the camera.

Returning to the earlier discussion of the separation of white light into its component colors, if a narrow slit is made on the white screen on which the band of the spectrum had been produced, it is possible to select any part of the band and eliminate the remainder. By keeping the band of light stationary it is possible to move the screen along the band and so allow any color desired to enter the slit. A crude monochromator has in fact been thus produced. If ink strokes are illuminated by this new light, that is, light of a particular color or wave-length, differences which are not apparent under white light may in some cases be observed and recorded. Two inks visually alike under white light may vary in the degree in which they reflect light of a particular wave length. Under these conditions separations can be accomplished by photographing such differences using a panchromatic plate.

In cases where slight differences of color are observed between two ink strokes, if these are illuminated with light of color identical to one of them, then the difference may be recorded photographically, when the one which is identical in color with the light source will be dropped from the photograph entirely or at least sufficiently to effect a separation between the two. In the use of colored lights for such examinations, it has been found that such light can most easily be obtained through the use of filters over the light source and the entire examination conducted in a dark room. There are available a great number of filters suitable for this work such as the Wratten Set of Sixty filters. The transmission curves for the Wratten filters are available and are of a great assistance in the selection of filters.

Ink strokes may also be examined by means of filters in a source of white light and in some cases separations are effected. The document can then be photographed using the filter over the camera lens, a panchromatic plate, and a source of white light. The Whiting filters, which transmit a white light constituted of selected parts of the spectrum, have been used in experimental research on this subject but their real usefulness is as yet not definitely known.

In addition to the photographic recording of the various methods of physical separation of ink strokes already mentioned, Mitchell<sup>7</sup> states: ".....another optical method of distinguishing between two writing inks, one of which is richer in the blue units than the other, is by means of

<sup>7</sup> C. Ainsworth Mitchell, "Scientific Documentary Evidence in Criminal Trials," "The Analyst," Volume 57, 1932, page 146.



photography on an ordinary process plate. When such difference in color is present, two inks which, when examined under the microscope, appear to match one another, may show a pronounced difference when photographed, and one richer in red appearing much darker in the print than in the original document. This method afforded conclusive evidence in the case of Rex v. Conwallis (1919) in which a woman produced a letter acknowledging the receipt of two thousand pounds, with a final "o" added to the amount in a different ink."

No set of rules can be laid down for the exact procedure which should be followed in the physical examination of ink strokes, inasmuch as such procedures will vary according to the type of inks encountered and their chemical and physical properties. It is very unlikely, however, that two inks of different compositions will defy all of these various methods of examination. Neither is it possible to state definitely what results will be obtained in efforts to effect a separation of ink strokes which can be definitely expected; however, the various methods mentioned will in the vast majority of cases permit a definite separation to be made and one which can be substantiated by photographic enlargements for subsequent trial proceedings.

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# **WANTED BY THE FBI**

**ROGER LEWIS GARDNER, with aliases**

**IMPERSONATION**



Detailed descriptive data concerning this individual appear on pages 17 through 20.



**WANTED BY THE FBI**  
**ROGER LEWIS GARDNER, with aliases**

On July 26, 1943, Mrs. Ora Murray, of Los Angeles, California, was brutally murdered. Her nude body was found on a golf course in Los Angeles on the morning of July 27, 1943. She had been brutally beaten to death and her face was covered with blood. A gardenia was found under her body and a cheap bracelet (a gift from her murderer) was found on her body. This heinous crime was widely publicized as "The Gardenia Murder Case."

As a result of facts developed just prior to the murder the Los Angeles Police Department issued a murder warrant against Roger Lewis Gardner under the name of Grant Wyatt Terry, an alias used by Gardner at that time.

The FBI became interested in the apprehension of Gardner in October, 1942, when, upon identifying himself to a young lady in a hotel in Denver, Colorado, as Richard C. Tardiff of the FBI, he then proceeded to obtain \$265.00 in cash from her by insisting to her that he had been ordered to the hospital for an operation. He later obtained additional cash of \$380.00 from this same victim and charged a \$50.00 suit of clothes to her account at a Denver department store.

On June 14, 1943, Gardner, under the name of Gregory Wallace Trimble, appeared in Indianapolis, Indiana. He immediately renewed the acquaintance of a young lady he had previously met in New Orleans. Nine days later he married her. During that period of time he posed as an attorney with the Lands Division, United States Department of Justice.

On June 29, 1943, a few days after his marriage, he departed for Kansas City allegedly on business. Upon his arrival in Kansas City, Missouri, on June 30, 1943, Gardner assumed the name of G. W. Trimble, and immediately began contacting young women. He proposed marriage to one of them who refused him. During these contacts he again posed as an attorney for the Lands Division of the Department of Justice and also as an attorney in the Lands Division of the War Department on one occasion.

Six days after he arrived in Kansas City he called his new wife in Indianapolis and gave her a hard luck story about losing his wallet and induced her to send him some money. She borrowed \$70.00 from a finance company and sent it to him immediately. He had already obtained her \$45.00 watch and charged a \$55.00 suit to her account at an Indianapolis department store.

Gardner left Kansas City about July 11, 1943, and next appeared in Los Angeles, California, on July 14, where he assumed the name of Grant Wyatt Terry and started his usual procedure of forcing his attention on numerous women and representing himself as an attorney in the Lands Division of the War Department. On the strength of this fraudulent representation he obtained approximately \$700.00 in cash and a valuable ring from one young lady, carrying out his nefarious swindle to a successful conclusion by



proposal of marriage to her.

Twelve days after he arrived in Los Angeles, on July 26, 1943, he met Mrs. Ora Murray and posed as an attorney in the Lands Division of the War Department under the name of "Paul." That night Mrs. Murray was murdered and Gardner left Los Angeles the next day. On October 18, 1943, he was seen in a hotel lobby in Detroit, Michigan.

Two complaints have been issued charging Gardner with violation of the Impersonation Statute. On July 29, 1943, a complaint was authorized and a warrant was issued at Indianapolis, Indiana, under Gardner's alias, Gregory Wallace Trimble. On August 7, 1943, an impersonation complaint was authorized at Los Angeles, California, and a warrant was issued and non ested, charging Gardner with a violation of the Impersonation Statute.

The FBI has definite knowledge of eighteen of his female victims, who have suffered at his hands during the past three years, six of whom made the mistake of marrying him. His utter disregard of the feelings of his victims is clearly illustrated by the following case.

In the summer of 1940 Gardner met a girl in Florida and took her to Lexington, Kentucky, as his wife. He lived with her there from August, 1940, to November 19, 1940. He deserted her on November 19. On November 23, she committed suicide. Three days later he married another girl at Williams-town, Kentucky, who, upon learning of the death of his other wife, started divorce proceedings on November 29, 1940.

His method of operation is to engage a room in a large hotel, meet a girl, impress her with supposed Government affiliation, present her with a cheap bracelet, pretend to fall in love with her, propose marriage if necessary to obtain her jewels and money, and even marry her if there is no other means to accomplish his black, dirty, schemes. His victims extend from Florida to California.

Gardner was born November 13, 1917, (Not verified) at Philadelphia, Pennsylvania. He is the son of Roger Carl Gardner and Pauline Gardner. When he was eighteen months old his parents were divorced, and in 1924 his mother married Howard Ells. They now reside in Nutley, New Jersey. Both enjoy a good reputation. Subject resided with his mother and stepfather after their marriage and received a grammar school education and attended high school in Passaic, New Jersey, until he became involved in sex relations with four girls while at school. Three of these instances were settled. However, on the fourth he was charged with seduction, which charge was subsequently dismissed. He left home in 1939 after being found guilty in a bastardy proceedings on which charge he was arrested February 25, 1939, and ordered to pay \$50.00 for confinement and \$5.00 weekly for the support of the child.

The criminal record of Roger Lewis Gardner is as follows:



November 12, 1935 - Arrested by Paterson, New Jersey, Police Department. Charge, refusing to pay rental of auto; dismissed.

January 8, 1936 - Arrested by Paterson, New Jersey, Police Department. Charge, operating motor vehicle without license; dismissed.

February 17, 1936 - Arrested by Passaic, New Jersey, Police Department. Charge, seduction of fifteen year old girl; complaint withdrawn.

August 8, 1936 - Arrested by Passaic, New Jersey, Police Department. Charge, Grand Larceny; sentenced to Annandale Reformatory for indeterminate period. Paroled July 29, 1937. Warrant issued for violation of parole October 28, 1941. Still outstanding.

February 24, 1939 - Arrested by East Orange, New Jersey, Police Department. Charge, fraudulent checks; released to Nutley, New Jersey, Police Department - dismissed.

February 25, 1939 - Arrested by Nutley, New Jersey, Police Department. Charge, Bastardy; \$50.00 for confinement and \$5.00 weekly for support of child. Process still outstanding.

March 24, 1939 - Arrested by Newark, New Jersey, Police Department. Charge, False Pretenses; dismissed.

January 4, 1942 - Arrested by Oklahoma City, Oklahoma, Police Department. Charge, vagrancy and investigation; released.

Description of Roger Lewis Gardner:

Name	Grant Wyatt Terry, with aliases: Richard C. Tardiff, Richard Thufle, Gregory Wallace Trimble, Greg Grant Tibbet, Richard C. Trimble, "Paul," Dave Hiltebrandt, G. W. Terry, R. C. Thufle, R. C. Thufli, David Hiltbrand, R. N. Thufil, Richard Chase, Roger Gardner, Roger Louis Gardner
------	--



Description of Roger Lewis Gardner: (Continued)

Age	26 years (Not verified)
Height	6' to 6' 1½"
Weight	174 pounds
Build	Medium slender
Hair	Brown
Eyes	Brown
Nationality	American
Scars and marks	Slight one-inch scar over left eye

Peculiarities	Wears small mustache occasionally; wears rimless glasses; teeth irregular; wears large ring on left finger, has pointed stone setting; wears white-gold Mavado wrist watch; wears a gold cross on chain around neck, cross bears the words "Never forget me"
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Appearance	Very neat; occasionally wears sports clothes
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Habits	Frequents best hotels, best night clubs and first class trains; has pleasant personality; forces his attention upon women and presents them with inexpensive bracelets; claims to be from New York; claims to be of Pennsylvania Dutch extraction; heavy eater; smooth talker; drinks Scotch and soda; sexual pervert
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FBI Number	1,144,541
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Fingerprint	O	32	W	IIM	17	Ref:	32
Classification	I	28	W	OII			32

If any information is obtained concerning Roger Lewis Gardner, it is desired that you notify the nearest Field Office of the Federal Bureau of Investigation, or wire the Director, Federal Bureau of Investigation, United States Department of Justice, Washington, D. C.





**"CRYPTOGRAPHY" \***  
**THE SCIENCE OF SECRET WRITING**  
by  
**Laurence Dwight Smith**

The importance of cryptography in modern warfare is stressed by the author from the opening paragraph. The fact that our armed forces are scattered over two hemispheres requires a secret means of communication whereby vital information may be exchanged without any outside agency becoming aware of the content of messages. On the other hand it is necessary to intercept and read enemy dispatches, whether they are transmissions sent by the enemy on the fighting fronts or by agents within our own boundaries who might send messages by short wave radio. A thorough knowledge of the fundamentals of cryptography is the basis for developing methods by which the above may be accomplished.

In developing the text of the first chapter the author indicates that modern cipher experts must cope with a great number of languages. He mentions Japanese, the languages of the Pacific Islands, the Chinese and Indian dialects, Russian and the languages of the Middle East and of Africa. Although languages vary to great extremes in some cases, in attacking modern ciphers in an effort to break the system, a knowledge of the letter frequencies of the enciphered language is utilized. Citing a few examples for comparison purposes, it is noted that the vowel percentage for English is approximately 40, Italian and Portuguese around 48, whereas the vowel count in Hawaiian, which uses only a 12-letter alphabet with an equal number of vowels and consonants, is proportionately higher.

In a brief history of secret writing the author states that cryptography (from Greek, hidden + meaning) in one form or another has probably been practiced ever since man has communicated his thoughts in speech or writing. He makes reference to the Spartan scytale, which is a method in which parchment is wound spirally around a cylindrical staff. After the message is inscribed on this parchment the ribbon is unwound and only that person having a cylinder of exactly the same dimensions can read the message by rewinding the ribbon so that the letters appear in their normal order. Shaving the head of a slave and tattooing a message upon it, allowing the hair to grow, and instructing the slave to ask the intended recipient of the message to shave his head and read the message thereon, was another ancient method for sending secret messages.

\* W. W. Norton & Company, Inc., New York, 1943; \$2.50.



Julius Caesar employed a simple substitution of one letter for another - that is, he substituted D for A, E for B, et cetera, using the third letter in the alphabet after the letter desired to be sent. According to the author this system, the replacement of letters by other letters, symbols or numbers is known as substitution cipher, while that system exemplified by the scytale previously described, is known as transposition cipher because it disarranges the order of the letters. These two systems are the two basic principles of modern cryptography. An interesting excerpt is quoted by the author concerning the virtues of perfect ciphers: "that they be not laborious to write and read; that they be impossible to decipher; and, in some cases, that they be without suspicion." - Francis Bacon.

Among the simple substitution ciphers referred to the following are worthy of note: Freemason, dot, line, zigzag, and triangle ciphers. The Freemason and variations of it are referred to as diagrammatic ciphers. This type of cipher was popular during the 15th century but has found some use today inasmuch as various diagrams representing cipher messages may be easily hidden in pictures, sketches, maps and so forth. Using the direct standard alphabet as the key and by a prearranged system placing a dot, line, a triangular or zigzag mark under various letters of the alphabet to obtain the desired message, it is possible to construct a cipher which, in the absence of the key, appears quite imposing. However, frequency data yield information which may be used to solve messages employing any of these methods. That is, since certain letters of a language are used more frequently than others the symbols of the cipher text representing the high frequency plain text letters will be used a correspondingly frequent number of times and by substituting these high frequency letters for the symbols which occur often in the message, plus a little experimenting, a solution can be obtained.

Besides its use in warfare and diplomatic circles cryptography is utilized by commercial companies for the sake of economy. Gangsters, kidnapers and other modern racketeers have utilized its principles, while in addition it has been the basis for the plot of well-known stories of which Poe's "Goldbug" is an example.

In addition to the problems and their solutions at the end of the book, the author discusses transposition and substitution ciphers, compares codes with ciphers and finally deals with cryptanalysis. The statement that ciphers are based upon two fundamental principles, that is, transposition and substitution, suggests a somewhat limited scope which is paradoxical when the great number of variations of these two methods are noted and the degree of difficulty of solution realized. The author presents a simple transposal of letters EHT DLIHC SI REHTAF OT EHT NAM to illustrate the principle of transposition. The plain message or plain text is easily obtained by reading the letters of each word in reverse - "THE CHILD IS FATHER TO THE MAN." The units of the message retain their original identities, their relative positions merely changing. Anagrams, wherein letters of a word are transposed to form a new word; acrostics, reading the initial, middle or last letters of each line (for example in a prose passage or



poem), taken consecutively to form words are other methods discussed. One important principle brought forth by the author is that there must be some system to the disarrangement of the letters of any message if the recipient is to quickly and accurately obtain the plain text. He points out the obvious futility of attempting to solve messages made up of a sequence of symbols as the alphabet by the trial and error method when it is realized that the 3-letter word "THE" can be transposed into six different sequences of letters; a word or sequence 10 letters long can be transposed into 3,628,800 different sequences while the figure 2,432,902,007,246,400,000 represents the number of different arrangements obtainable from a sequence of letters 20 letters long (these figures are believed reliable). The two practical methods by which a message may be scrambled and subsequently reduced to order again are:

- (1) The use of geometrical forms as patterns to aid both the enciphering and deciphering.
- (2) The establishment of a procedure for disarranging letters by taking a special route to inscribe the plain text within the chosen pattern, and following another definite route for transcribing the cipher text.

The geometrical designs for practical use are restricted to a certain degree to figures such as triangles, squares, rectangles, or trapezoids. More intricate designs tend to be subject to error. The following are some of the possible routes that may be followed to disarrange the letters of plain text but at the same time retaining a system or method:

- |                          |                                    |
|--------------------------|------------------------------------|
| (1) Simple horizontal    | (5) Simple diagonal                |
| (2) Simple vertical      | (6) Alternate diagonal             |
| (3) Alternate horizontal | (7) Spirals                        |
| (4) Alternate vertical   | (a) Clockwise or counter-clockwise |

For practical use any of these various routes may be followed in the inscription process (writing in) and the transcription process (taking out). In addition, any of the four corners of a rectangle, for example, may be the starting point in the inscription process. To decipher a message using any combination of the above routes it is necessary only to reverse the process. Although, as the author states, the security of the above ciphers is not great, this weakness is remedied to a large extent by columnar transposition using either a filled or unfilled design plus a key word or phrase to control the transposition. The author points out that a second transposition may take place whereby additional security would be gained but although security is the major aim of cryptography, greatly complicating the system in use tends to defeat the aims of the correspondents rather than those of the enemy.

Substitution ciphers differ from those mentioned thus far in that the units composing the plain text retain their relative positions but not their identities. Examples of substitution are evident in everyday life



when we think of the Morse Code, shorthand, etc. To the uninitiated these symbols are truly cryptic, but to one versed in their meanings, the meaning intended is quite evident. As the author points out, playing cards, pictures, dots and dashes, arms, flags or lanterns as in semaphoring, or any variety of symbols or hieroglyphics may be used although in practice there are serious limitations. For instance, transmitting various designs by wireless or telegraph is out of the question. Whenever one and only one substitute is indicated for one letter of the alphabet the frequency method of solution for this type cipher is applicable.

Three more practical methods of substitution encipherment whereby a cipher alphabet is produced mechanically are:

- (1) Single alphabet substitution - each plain text letter is replaced by one and always the same cipher equivalent.

Ex. - type employed by Julius Caesar.

- (a) Cipher alphabet is in normal sequence.
- (b) 25 points of coincidence are possible although in all, the equivalents are reciprocal.\* An example of such a shifted alphabet:

Plain text	A B C D E F -
Cipher text	D E F G H I -

Frequency data may be used to solve this type.

- (2) Mixed cipher alphabet - alphabetical sequence may be changed by using a key word. The alphabets may be as follows, using the key word "SECURITY".

Plain text	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
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Cipher text	S E C U R I T Y A B D F G H J K L M N O P Q V W X Z
-------------	---

By employing frequency data this type can be solved almost as readily as the unmixed cipher sequence type.

- (3) Transposition Mixed Cipher Sequence - any of the transposition schemes previously mentioned could be used to effect a transposal, but columnar transposition is thorough and simple. Still using a key word - "SECURITY" - the alphabet may be written

S E C U R I T Y
A B D F G H J K
L M N O P Q V W
X Z

\* It is noted that the author's opinion concerning reciprocity is at variance with that of other authors.



and transcribed vertically to obtain the cipher alphabet which would then be:

S A L X E B M Z C D N U F O R G P I H Q T J V Y K W

A different sequence could be obtained by considering "SECURITY" as a numerical key as well as a key word, the lowest letter in the alphabet being given the number 1, the next lowest 2 and so forth. This key controls the transcription of the columns. Complete mixing of the sequences is accomplished and this method is capable of being remembered without written records. However, the degree of security is still not high.

Single-alphabet substitution with variants offers an interesting method to disguise to a certain extent the true occurrence of the letters in a given message. The following arrangement produces 3 variants for each letter.

	1 2 3 4 5 6 7 8 9
963	A B C D E F G H I
852	J K L M N O P Q R
741	S T U V W X Y Z

Reading the digit at the top first, the letter A can be represented by the following substitution values: 19, 16 or 13. Additional complexities may be developed to make the system more secure, however, a larger number of messages, thoroughly analyzed, will exhibit certain repetitions which may be used in the process of breaking the cipher.

A more complicated method for encipherment - one that employs several alphabets - known as polyalphabetic substitution - is next discussed. A simple example using a key word illustrates the system. The key word is converted into digits in the usual way resulting in a numerical key. This key is written out in full and under it the plain text message is inscribed. The number at the top of each column indicates the letter farther along in the alphabet to be substituted for each letter in that column. For instance if the first digit of the key is 8 and the first letter falling under the number is I the letter Q would be substituted for it. And the same for the remaining letters of the message. If the key word is 9 letters long, nine different cipher alphabets will have been used in the encipherment.

The Vigenere Table in which 25 substitution alphabets have been formed for the normal alphabet, accomplishes this same encipherment. The rows of alphabets are numbered 0 to 25 and the numbers of the numerical key indicate the row from which to obtain the cipher letter read under the plain text letter which appears in the normal alphabet at the top of the table. Poor security is afforded in the use of the Vigenere Table because a periodicity manifests itself externally in the cipher text and is indicated by the number of alphabets used in the enciphering process. If 3 or 7 or a



given number of alphabets is used this fact becomes evident from the repetitions appearing in the cipher text. These are caused by repeated words or sequences occurring in the plain text which are separated by an interval of 3 or 7 et cetera, (whatever number of different alphabets is used). If, rather than normal alphabets, mixed sequences are used in the Vigenere Table a greater security is developed, although, in analyzing a cipher message suspected of being periodic polyalphabetic substitution finding the proper period and thus the number of alphabets used, from the repetitions apparent, reduces the procedure to analyzing single alphabets. By placing each element of the cipher text into its proper alphabet the correct equivalent can be found by using tables of letter frequency and substituting values according to the frequency of occurrence of certain of the letters in each alphabet. Complexities may be introduced to further secure the above system at the discretion of the correspondents.

Worthy of mention in addition to Vigenere, who is responsible for the Vigenere system, are Porta, who devised a table of 12 alphabets; and Beaufort, who developed a table which amounted to the Vigenere Square increased by one alphabet making 27 rows and columns instead of 26.

As a distinct departure from the type of substitution represented by Vigenere the author presents polygraph substitution - that is, the substitution of cipher digraphs or trigraphs for plain text digraphs or trigraphs. The Playfair cipher is one of the most popular of this type of cipher; it is probably the least cumbersome of all. Digraphic substitution is accomplished following prescribed rules; however, two weaknesses are apparent. (1) A table of digraphic frequencies can be used to break the cipher in question just as frequency tables may be applied to single alphabet encipherment. (2) When a plain text digraph is reversed, the equivalent cipher digraph is reversed.

The chapter entitled "Codes Compared with Ciphers" may be summarized briefly by setting forth the author's distinction between the two. Ciphers employ disarranged letters or substitution for letters whereas codes employ substitutions (generally 5-letter groups) for words, phrases, or sentences. The difference appears to be technical for codes are merely a highly specialized form of substitution ciphering.

The discussion of Cryptanalysis (that is, the attempt to solve a system by careful analysis of the material without a previous knowledge of the system employed) brings forth various rules, principles and procedures valuable to the would-be decipherer. The prerequisites, patience and accuracy, are true requirements for the successful Cryptanalyst. In attacking any cryptogram the first step is to determine whether it is one of transposition or substitution. A frequency count usually indicates this. If the occurrence of the letters E-T-O-A-N-I-R-S-H (the most recurrent letters in the English language) is pre-dominant and in approximately the order given above, transposition is indicated whereas repeated low frequency letters indicate substitution cipher. It should be noted however that the frequency of letters and letter groups vary with conditions and circumstances. There is a difference of frequency between different languages



as well as differences in certain types of expressions in the same language. The author carries through the cryptanalysis of ciphers both in transposition and substitution applying the principles discussed in previous chapters concerning these types.

In conclusion numerous problems are set forth for solution. The arrangement of the problems presented is more or less of ascending difficulty, the general scheme being progressive. This allows for experience in the simpler type problem which gradually develops a technique the beginner may use to attack the more complex problems.

The appendices provided contain information on the enciphering of Japanese; explain the principle of the Baconian Biliteral Cipher; set forth letter and word frequencies, such as: Order of frequency of single letters, most common digraphs and trigraphs, most frequent doubles etc., for the following languages: English, French, German, Italian and Spanish; a selected bibliography; and a number of definitions.

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HAWAII - George R. Larsen, Jr., Ch. of Police, Island of Hawaii  
Jean R. Lane, Ch. of Police, Island of Maui, succeeding George R. Larsen, Jr.

ALABAMA - W. H. Reeves, Ch. of Police, Andalusia, succeeding W. S. Long  
Noah H. Danley, Ch. of Police, Florence  
Charles E. Cheatham, Ch. of Police, Haleyville, succeeding J. W. Langston  
H. M. Couch, Sheriff, Marion County, Hamilton, succeeding A. Berryhill  
John Logan, Ch. of Police, Leighton, succeeding William M. Campbell  
Marion Patterson, Ch. of Police, Lipscomb

ARIZONA - Forrest Willis, Ch. of Police, Flagstaff, succeeding J. B. Wright  
Eugene Shute, Ch. of Police, Globe, succeeding J. Bert Nichols

CALIFORNIA - William Carlin, Ch. of Police, Atwater, succeeding E. L. Walter  
Les Fearrien, Ch. of Police, Blue Lake, succeeding A. Anderson  
R. R. Carnahan, Acting Ch. of Police, Culver City, succeeding William A. McDonald  
Vern Givens, Ch. of Police, Ferndale, succeeding of C. A. Boots  
Louis B. Taylor, Ch. of Police, Lakeport, succeeding Otis Hileman  
Ralph Phillips, Ch. of Police, Los Gatos  
Paul W. Kerr, Ch. of Police, Lynwood, succeeding Walter E. Thomas  
Joseph E. Moore, Sheriff, Napa, succeeding John P. Steckter  
Sal Jimno, Ch. of Police, Pittsburg, succeeding Charles Hamilton

CONNECTICUT - Henry P. Clark, Ch. of Police, New Haven, succeeding the late Philip T. Smith  
James Ward, Ch. of Police, Wauregan, succeeding Louis Cote  
Robert E. Hyde, Sheriff, Tolland County, Rockville, succeeding Edwin R. Domock

DELAWARE - Henry F. Hill, Ch. of Police, Rehoboth Beach, succeeding William L. Marvel  
Temple Heinhold, Acting Ch. of Police, Smyrna, succeeding John W. Jacobs

FLORIDA - J. C. Williams, Ch. of Police, Belle Glade, succeeding N. D. Lloyd  
James Jasper Cullifer, Ch. of Police, Lynn Haven, succeeding E. C. Shriver  
Raymond Brown, Ch. of Police, Stuart, succeeding M. Victor Sutter



GEORGIA - W. A. Crow, Sheriff, Hall County, Gainesville, succeeding Melvin J. Clark  
 Holmes J. Hawkins, Sheriff, Jones County, Gray, succeeding the late J. P. Hawkins  
 W. H. Johnson, Ch. of Police, Pinehurst  
 Carl Barrett, Ch. of Police, Rockmart, succeeding Homer Morgan

IDAHO - M. R. Swain, Ch. of Police, Soda Springs, in the absence of R. C. Lloid

ILLINOIS - Henry C. Bishop, Ch. of Police, East St. Louis  
 Harry Denny, Ch. of Police, Harrisburg, succeeding Walter Jackson  
 Albert E. Cain, Ch. of Police, Wilmington, succeeding L. E. Davy

IOWA - Jack Berry, Ch. of Police, Boone, succeeding James E. Reid  
 J. Elmer Ferren, Ch. of Police, Centerville, succeeding Ray Brunson  
 John Clerge, Ch. of Police, Fairfield, succeeding Walter W. Harris

KANSAS - Edgar William Heyl, Ch. of Police, Salina  
 E. M. Beal, Sheriff, Shawnee County, Topeka, succeeding William Frey

KENTUCKY - Woodrow W. High, Ch. of Police, Augusta  
 Leslie Bodine, Sheriff, Nelson County, Bardstown  
 James Allen Rudd, Ch. of Police, Benton, succeeding Joe Graham Edwards  
 Jim Waldon, Ch. of Police, Brodhead, succeeding Ollie Gollett  
 J. B. Hays, Ch. of Police, Calhoun  
 Whit Wright, Sheriff, McLean County, Calhoun  
 Charles Dolby, Ch. of Police, Carrollton, succeeding D. P. Demint  
 W. C. Pate, Ch. of Police, Hardinsburg, succeeding Carl Meader  
 Lee Beckham, Ch. of Police, Henderson, succeeding Shelby Reid  
 J. L. Lynch, Ch. of Police, Kuttawa, succeeding Eugene F. McCollum  
 Flora B. Cassady, Sheriff, Oldham County, LaGrange, succeeding Stuart S. Cassady  
 E. L. Riddle, Ch. of Police, Midway  
 R. S. Cary, Ch. of Police, Sebree

LOUISIANA - Chilton Jeansonne, Ch. of Police, Eunice, succeeding Allen Huntly, Jr.

MASSACHUSETTS - John W. Rycroft, Ch. of Police, Lexington, succeeding James J. Sullivan  
 John P. Connors, Acting Ch. of Police, Manchester, succeeding L. Allen Andrews

MICHIGAN - Lewis G. Dietrich, Ch. of Police, Mason, succeeding Ralph W. Hall

MINNESOTA - Bert E. Tonberg, Sheriff, Lake of the Woods County, Baudette, succeeding John R. Morris  
 Glenn P. Miller, Ch. of Police, Big Fork, succeeding Calvin Holsman  
 Ernest Baumgard, Ch. of Police, Brewster, succeeding George Frey



MINNESOTA (Continued)

Arthur Zemple, Ch. of Police, Deerwood, succeeding H. A. Simonson  
Clarence A. Paton, Ch. of Police, Echo, succeeding Hugo Marquardt  
Charles J. Tierney, Ch. of Police, St. Paul

MISSOURI - Henry Vermillion, Ch. of Police, Joplin, succeeding T. C. Bone

NEBRASKA - Frank Maxey, Ch. of Police, Bellevue, succeeding Fay H.  
Schiefelbein

Charles E. Kenyon, Ch. of Police, Mitchell, succeeding Pat McDonald  
John Tesar, Sheriff, Saline County, Wilber, succeeding F. A. Shimerda

NEVADA - Lance E. Clawson, Ch. of Police, Elko, succeeding S. O. Guidici  
Gus Arnie, Ch. of Police, Fallon, succeeding Walter A. Dexter

NEW JERSEY - Thomas J. Sinnett, Ch. of Police, Matawan Township, in the  
absence of Thomas F. Powers

J. E. Penze, Ch. of Police, Mays Landing, succeeding Harold H. Gray  
John Cortright, Ch. of Police, Whippany, succeeding Eugene Clemens  
A. M. Karsch, Ch. of Police, Woodcliff Lake, succeeding Chris Huljus

NEW MEXICO - Kelly Stout, Ch. of Police, Artesia, succeeding J. C. Floore

NEW YORK - William F. Maxwell, Ch. of Police, Cohoes, succeeding Joseph R.  
Garrett

John A. Cawley, Acting Ch. of Police, Lackawanna, succeeding Ray  
Gilson

Hugh J. Shannon, Acting Ch. of Police, North Pelham, succeeding James  
Whalen

Leonard C. White, Ch. of Police, Rotterdam

Michael Pinto, Ch. of Police, Tuckahoe

NORTH CAROLINA - J. W. Jessup, Ch. of Police, Concord, succeeding B. F.  
Widenhouse

H. E. King, Ch. of Police, Durham

R. W. Tyson, Sheriff, Pitt County, Greenville

C. J. Finnison, Ch. of Police, Mebane, succeeding William P.  
LeGrande, Jr.

Frank Crawford, Ch. of Police, Murphy, succeeding W. W. Rogers

NORTH DAKOTA - Martin Hjelseth, Sheriff, Foster County, Carrington,  
succeeding M. J. O'Neill

Ed. H. Wilk, Ch. of Police, Hazen, succeeding Joseph Unterseher

Earl Vredenburg, Ch. of Police, Mandan, succeeding James P. Buckley

John Mitzel, Ch. of Police, Napoleon, succeeding Wendel Scherr

Herbert Kearns, Ch. of Police, Walhalla, succeeding Harry Volrath

OHIO - Robert F. Miller, Ch. of Police, Akron, succeeding Ray M. Williams

Kermit L. Westbay, Ch. of Police, Lima, succeeding James C. Goodwin

L. C. Galyean, Sheriff, Preble County, Eaton, succeeding M. H. Clear



OKLAHOMA - Neal D. Adee, Sheriff, Boise City, succeeding Harris B. Powell  
P. M. Montgomery, Sheriff, Rogers County, Claremore, succeeding  
Tom J. Dean  
L. R. Sights, Ch. of Police, Clinton, succeeding Allman Russell

PENNSYLVANIA - Harry Anderson, Ch. of Police, Beaver, succeeding Lysle C.  
Kimple  
John McKissock, Acting Ch. of Police, Bellevue, succeeding Jacob J.  
Manning  
H. F. Bearer, Ch. of Police, Carrolltown, succeeding W. A. Blum  
William H. Saylor, Ch. of Police, Davidsville  
Grover C. Johnson, Ch. of Police, East Washington  
Samuel R. Calabus, Ch. of Police, Greensboro  
John Schissler, Ch. of Police, Shaler Township, Millvale  
A. Wintamute, Ch. of Police, Saltsburg  
Grover Swanger, Ch. of Police, Smithfield  
Michael Calizzi, Ch. of Police, Vandergrift, succeeding J. Arthur  
Spang  
George Aul, Ch. of Police, Wilmore  
Blaine B. Barefoot, Acting Ch. of Police, Windber, succeeding Ray  
Holsopple

SOUTH DAKOTA - Pat Arnold, Ch. of Police, Rapid City, succeeding Norris  
Hendrickson  
Ernest Patnoe, Ch. of Police, White River, succeeding Merrit Graham

TENNESSEE - Grady Head, Sheriff, Hamilton County, Chattanooga, succeeding  
Fred Payne  
George L. Ball, Sheriff, Chester County, Henderson, succeeding I. W.  
Helms  
Sam Kesterson, Ch. of Police, Lenoir City, succeeding V. L. Luttrell  
Jewel J. Mullican, Ch. of Police, McMinnville, succeeding Jasper Bain

TEXAS - Mrs. R. L. Buster, Acting Ch. of Police, Abilene, succeeding the  
late R. L. Buster  
Richard Weston Andrus, Ch. of Police, Alice, succeeding George B.  
Clegg  
C. P. McGlothlin, Ch. of Police, Bartlett  
Truitt Jordan, Ch. of Police, Brownsville  
Hogue Poole, Sheriff, La Salle County, Cotulla, succeeding the late  
T. H. Poole  
T. B. Bailey, Ch. of Police, Edinburg, succeeding L. G. Hardee  
Robert D. Drennan, Ch. of Police, El Paso, succeeding Lawrence T.  
Robey  
Fred Blair, Ch. of Police, Killeen, succeeding Bill Garner  
S. B. Gandy, Acting Ch. of Police, Lufkin, succeeding Ralph C.  
Chancey  
W. W. Massey, Ch. of Police, Pecos, succeeding L. H. O'Neal

UTAH - George Lynn Smith, Sr., Ch. of Police, Tooele, succeeding George E.  
Jorgenson



VERMONT - Harvey R. Nelson, Ch. of Police, Ludlow

WASHINGTON - Harry Brown, Ch. of Police, Buckley, succeeding C. R. Greenlee

Glen Moore, Ch. of Police, East Port Orchard

Lon Shackelton, Ch. of Police, Ione, succeeding George Madson

Robert E. Graham, Ch. of Police, Kent, succeeding F. M. Imhoff

Harry Allen, Ch. of Police, Latah, succeeding E. C. Davis

Ralph Whitehead, Ch. of Police, Moxee City, succeeding C. J. Fredericks

Charles E. Tumleson, Ch. of Police, Oak Harbor, succeeding Frank Hadaway

William M. Clapp, Ch. of Police, Okanogan, succeeding Lee Barker

Ralph Hand, Ch. of Police, Poulsbo, succeeding Alfred Hansen

WEST VIRGINIA - Sherman Weekley, Ch. of Police, Lumberport, succeeding Lonnie Ayers

Charles Boynton Kennedy, Ch. of Police, Mannington, succeeding Charles Fluharty

Whetzel Bradford, Ch. of Police, Pennsboro, succeeding J. W. Law

C. L. Henthorn, Ch. of Police, St. Mary's

Richard L. Hogg, Ch. of Police, Wellsburg

WISCONSIN - Edward J. Bienlein, Ch. of Police, Cedarburg

Arthur Karff, Acting Ch. of Police, Kohler, succeeding the late John Case

Edward Accola, Ch. of Police, Prairie du Sac, succeeding Albert Utpotel

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## INTERESTING FINGERPRINT PATTERN

The fingerprint pattern illustrated below is rather unusual in that it contains three separate loop formations with three distinct deltas. It is, of course, classified as a whorl.



In tracing a whorl which has three deltas, the tracing begins at the extreme left delta and proceeds toward the extreme right delta. The delta in the middle is disregarded. Thus, the tracing of the whorl pattern illustrated is "inner."



Communications may be addressed to the Field Office covering the territory in which you are located by forwarding your letter or telegram to the Special Agent in Charge at the address listed below. Telephone and teletype numbers are also listed if you have occasion to telephone or teletype the Field Office.

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Atlanta 3, Georgia	Hammack, F. R.	Walnut 3605	501 Healey
Baltimore 2, Maryland	Vincent, J. W.	Lexington 6700	800 Court Square
Birmingham 3, Alabama	Brown, D. K.	4-1877	300 Martin Building
Boston 9, Massachusetts	Soucy, E. A.	Liberty 5533	100 Milk Street
Buffalo 2, New York	Little, J. B.	Madison 1200	400 U. S. Court House
Butte, Montana	Banister, W. G.	2-2304	302 Federal
Charlotte 2, N. C.	Scheidt, E.	3-4127	914 Johnston
Chicago 3, Illinois	Drayton, S. J.	Randolph 2150	1900 Bankers'
Cincinnati 2, Ohio	Belmont, A. H.	Cherry 7127	637 U. S. Post Office & Court House
Cleveland 13, Ohio	Boardman, L. V.	Prospect 3550	900 Standard
Dallas, Texas	Danner, R. G.	Riverside 6101	1318 Mercantile Bank Building
Denver 2, Colorado	Nicholson, G. A.	Main 4335	518 Railway Exchange
Des Moines 9, Iowa	Dalton, J. L.	3-8618	739 Insurance Exchange
Detroit 26, Michigan	Bugas, J. S.	Randolph 2905	913 Federal
El Paso, Texas	Bryce, D. A.	Main 1711	202 U. S. Court House
Grand Rapids 2, Michigan	McFarlin, M. W.	6-5337	715 Grand Rapids National Bank
Honolulu 16, Hawaii	Thornton, J. E.	4977	206 Dillingham
Houston 2, Texas	Abbatechio, R. J.	Charter 4-6061	1212 Esperson
Huntington, W. Va.	Kuhnel, E. E.	2-9366	700 West Virginia
Indianapolis 4, Indiana	Hostetter, D. S.	Market 6415	327 Federal Building
Jackson 1, Mississippi	Holloman, F. C.	3-5221	700 Mississippi Tower
Juneau, Alaska	Stein, C. W.	618	515 Federal and Territorial
Kansas City 6, Missouri	Brantley, D.	Victor 4686	707 U. S. Court House
Knoxville 02, Tennessee	Murphy, W. A.	4-2721	407 Hamilton National Bank
Little Rock, Arkansas	Untreiner, R. J.	2-3158	445 Federal
Los Angeles 13, Calif.	Hood, R. B.	Madison 7241	900 Security
Louisville 2, Kentucky	Moss, H. K.	Wabash 8851	633 Federal
Memphis 3, Tennessee	Wyly, P.	5-7373	2401 Sterick
Miami 32, Florida	Kitchin, A. P.	9-2421	1300 Biscayne
Milwaukee 2, Wisconsin	O'Connor, H. T.	Daly 4684	735 U. S. P. O., Customs & Court House
Newark 2, New Jersey	McKee, S. K.	Market 2-5613	1836 Raymond-Commerce
New Haven 10, Conn.	Gleason, R. F.	7-1217	510 The Trust Company
New Orleans 12, La.	Guerin, R. A.	Canal 4671	1308 Masonic Temple
New York 7, New York	Conroy, E. E.	Rector 2-3515	234 U. S. Court House, Foley Square
Norfolk 10, Virginia	McSwain, G. R.	4-5441	411 Flatiron
Oklahoma City 2, Okla.	Logan, K.	2-8186	940 First National
Omaha 2, Nebraska	Naughten, T. E.	Jackson 8220	629 First National Bank
Philadelphia 7, Pa.	Sears, J. F.	Rittenhouse 5300	500 Widener Building
Phoenix, Arizona	Duffey, H. R.	4-7133	307 W. C. Ellis
Pittsburgh 19, Pa.	Johnson, H. K.	Grant 2000	620 New Federal
Portland 5, Oregon	Kramer, R. P.	Broadway 1167	411 U. S. Court House
Providence 3, R. I.	Morley, D. R.	Dexter 1991	510 Industrial Trust Company
Richmond 19, Virginia	Bobbitt, H. I.	7-2631	601 Richmond Trust
St. Louis 1, Missouri	Norris, G. B.	Chestnut 5357	423 U. S. Court House & Custom House
St. Paul 1, Minnesota	Rhodes, M. B.	Garfield 7509	404 New York
Salt Lake City 1, Utah	Newman, J. C.	5-7521	301 Continental Bank
San Antonio 6, Texas	Suran, R. C.	Garfield 4216	478 Federal
San Diego 1, California	Nathan, H.	Main 3044	728 San Diego Trust & Savings Bank
San Francisco 4, Calif.	Pieper, N. J. L.	Yukon 2354	One Eleven Sutter, Room 1729
San Juan 21, Puerto Rico	Lopez, J. M.	1971	508 Banco Popular
Savannah, Georgia	Ruggles, J. R.	3-3026	305 Realty
Seattle 4, Washington	Fletcher, H. B.	Main 0460	407 U. S. Court House
Sioux Falls, S. D.	Hanni, W.	2885	400 Northwest Security National Bank
Springfield, Illinois	Hallford, F.	2-9675	1107 Illinois
Syracuse 2, New York	Cornelius, A.	2-0141	708 Loew Building
Washington 25, D. C.	Hottel, G.	Republic 5226	1435-37 K Street, N. W.

The Teletypewriter number for each Field Office, including the Bureau at Washington, is 0711, except the New York City Office, which is 1-0711, and Washington Field, which is 0722.

Communications concerning fingerprint identification or crime statistics matters should be addressed to:-

Director  
Federal Bureau of Investigation  
United States Department of Justice  
Pennsylvania Avenue at 9th Street, N. W.  
Washington, D. C.

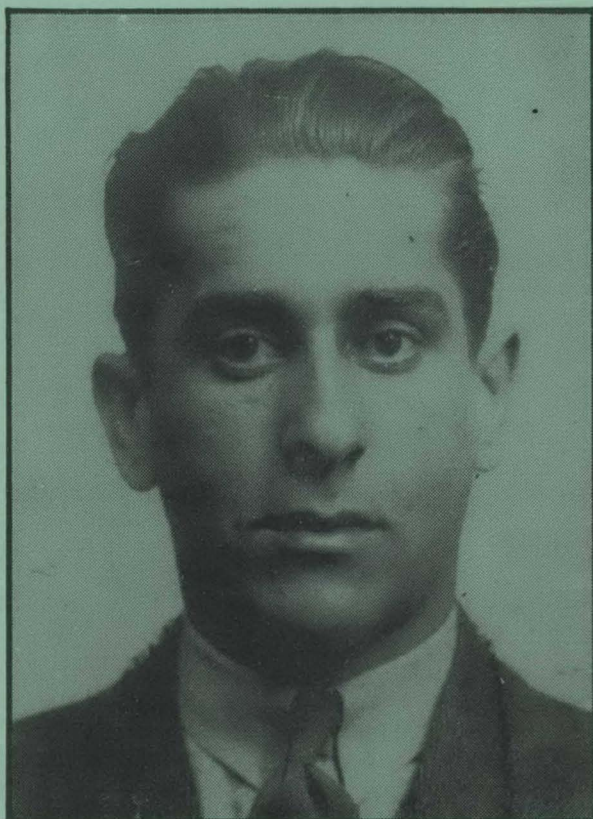
The office of the Director is open twenty-four hours each day.

TELEPHONE NUMBER  
EMERGENCY (KIDNAPING)

EXECUTIVE 7100  
NATIONAL 7117



# WANTED BY THE FBI . . .



**ROGER LEWIS GARDNER, with aliases**

## **IMPERSONATION**

Detailed descriptive data concerning this individual appear on pages 17 through 20.

